TOSHIBA

FILE NO. 020-200201

SERVICE MANUAL

COLOR TELEVISION

N2ES Chassis

32A32

(TAC0245)

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CHAPTER 1 GENERAL ADJUSTMENTS

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is (A) kV at zero beam current (minimum brightness) under a 120V AC power source. The high voltage must not, under any circumstances, exceed (B) kV.

   Refer to table-1 for high voltage (A), (B).
   (See SETTING & ADJUSTING DATA on page 16)

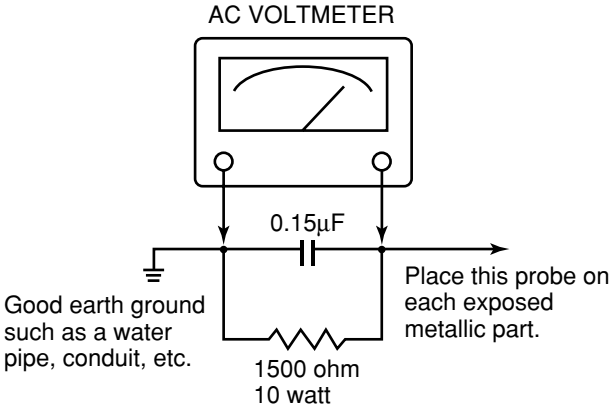
   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. This receiver is equipped with a Fail Safe (FS) circuit which prevents the receiver from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the receiver is serviced, the FS circuit must be checked to determine that the circuit is properly functioning, following the FS CIRCUIT CHECK procedure in this manual.
3. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
4. Some part in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation Transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner:

   Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μF, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 μF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3 volts rms. This corresponds to 0.2 milliamp. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.


AC VOLTMETER
0.15μF
Good earth ground such as a water pipe, conduit, etc.
Place this probe on each exposed metallic part.
1500 ohm
10 watt

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-ray radiation or other hazards.

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

SET-UP ADJUSTMENT (FOR 13", 14", 19", 20")

■ The following adjustments should be made when a complete realignment is required or a new picture tube is installed. Perform the adjustments in order as follows :

1. Color Purity
2. Convergence
3. White Balance

Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning. Refer to figure 1.
Mounting position of the purity magnet assembly should fit to same position as old one because slightly difference to the position depend on a kind of tube.

***** There are no adjustment of purity and convergence in some picture tube (Unified with purity magnet)

COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Set the brightness and contrast to maximum.
3. Use a green raster from among the built-in test signals.
4. Loosen the clamp screw holding the yoke and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 2.) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, enter the raster vertically.
7. Slowly move the yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster.

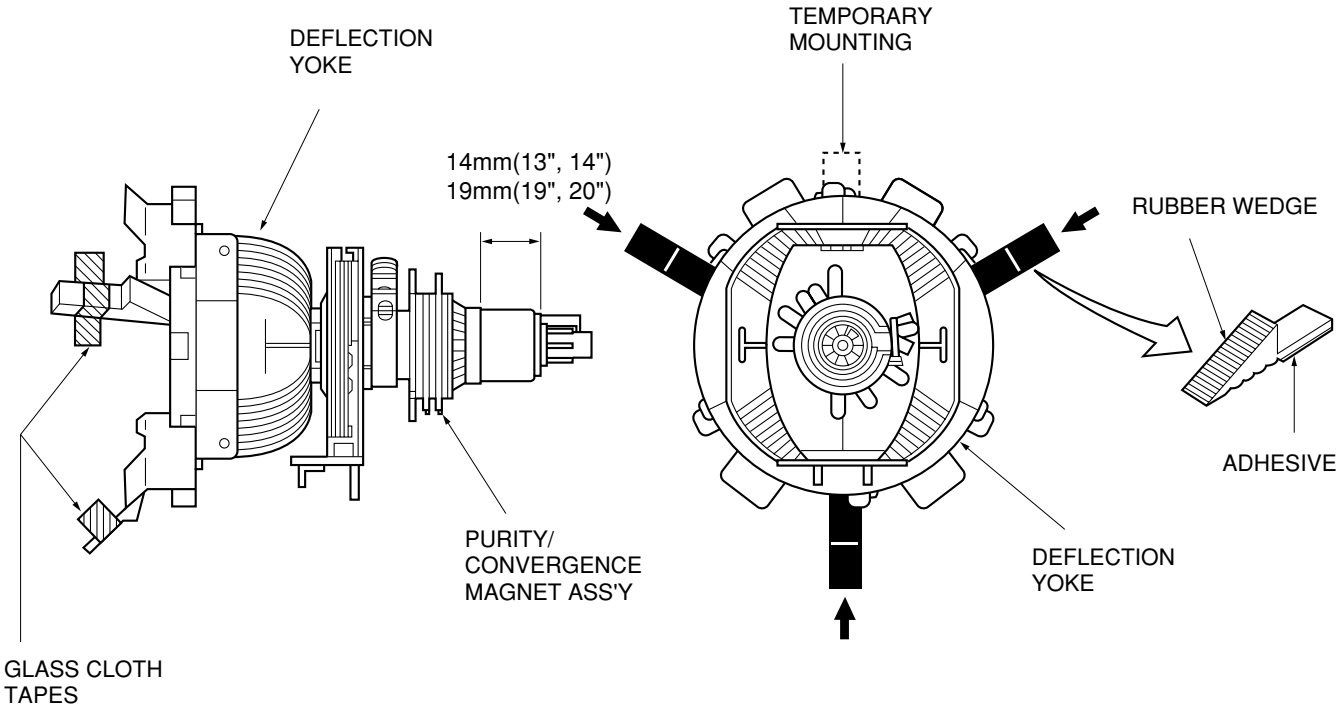


Figure 1.

CONVERGENCE ADJUSTMENTS

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ CENTER CONVERGENCE ADJUSTMENT

1. Use the cross-dot pattern from among the built-in test signals.
2. Set the brightness and contrast for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 2.) and superimpose red and blue vertical lines in the center area of the picture screen.
4. Turn the both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines at the center of the screen.
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual interaction and make dot movement complex.

■ CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of deflection yoke slightly to allow the yoke to tilt.
2. Temporarily put a wedge as shown in figure 1. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 3.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 3.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick three adhesive tapes on wedges as shown in figure 1.

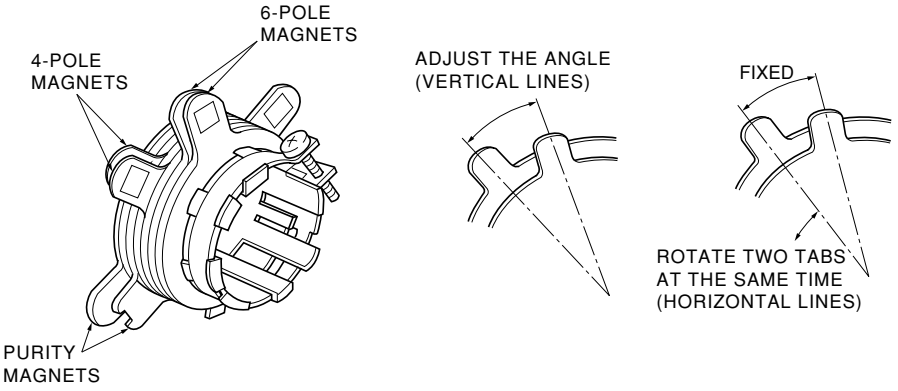
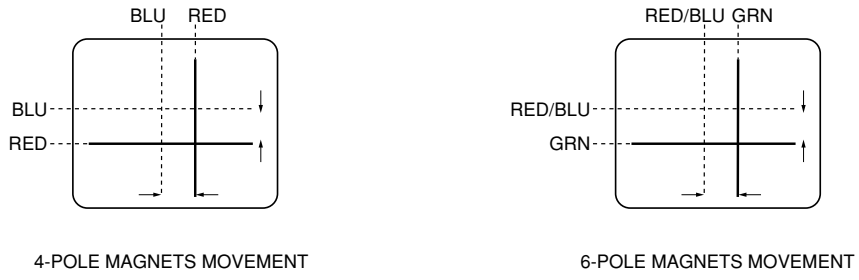


Figure 2.



Center Convergence by Convergence Magnets

Circumference Convergence by DEF Yoke

Figure 3. Dot Movement Pattern

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

(FOR 35", 36")

■ The following adjustments should be made when a complete realignment is required or a new picture tube is installed. Perform the adjustments in order as follows :

1. Color Purity
2. Convergence
3. White Balance

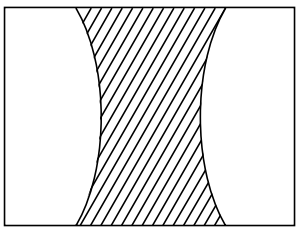
Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning. Refer to figure 1.
Mounting position of the purity magnet assembly should fit to same position as old one because slightly difference to the position depend on a kind of tube.

***** There are no adjustment of purity and convergence in some picture tube (Unified with purity magnet)

COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Evenly degauss the entire screen.
2. Set the CONTRAST and BRIGHTNESS Controls to the maximum.
3. Display built-in green raster using the TEST SIGNAL SELECTION function.
4. Loosen the clamp screw holding the deflection yoke (and remove the Rubber Wedges).
5. Slide the yoke forward or backward to provide vertical green belt (zone) in the picture screen.
6. Rotate and spread the tabs of the purity magnet (See figure 4.) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically by adjusting the magnet as shown below.



Green Belt

7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster.
9. Put four wedges into the space between the picture tube and the yoke to hold the yoke in the adjusted position. (See figure 2.)
   Do not tilt the yoke by excessive insertion of the wedge.
10. Remove cover paper of wedge and stick wedges on the tube to fix the yoke in the adjusted position.
    Fix the wedges with glass cloth tapes.

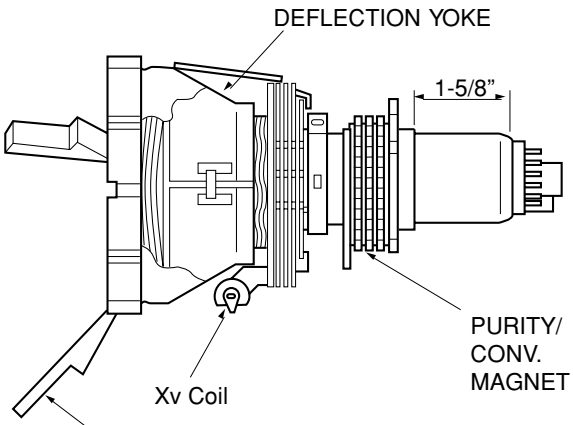


Figure 1.

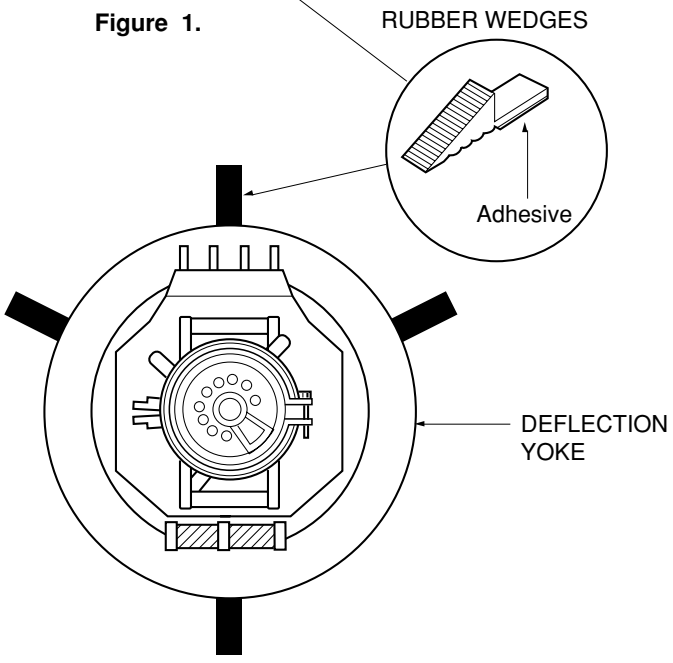


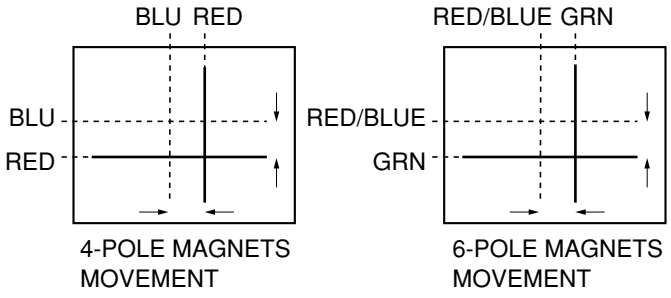
Figure 2.

CONVERGENCE ADJUSTMENTS

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ **CENTER CONVERGENCE ADJUSTMENT**

1. Display built-in cross-dot pattern using the TEST SIGNAL SELECTION function.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Loosen the tightening ring and adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 4.) and superimpose red and blue vertical lines in the center area of the picture screen. (See figure 3.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 3.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole magnets interact and make dot movement complex.
7. After completing the "CENTER CONVERGENCE ADJUSTMENT" tighten the tightening ring to fix the magnets.



Center Convergence by Convergence Magnets

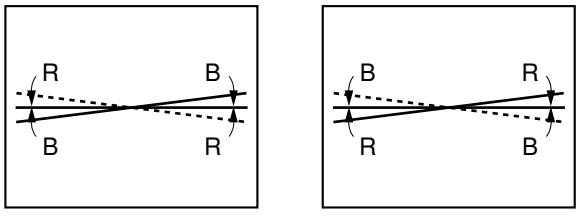
Figure 3.

■ **Xv COIL ADJUSTMENT**

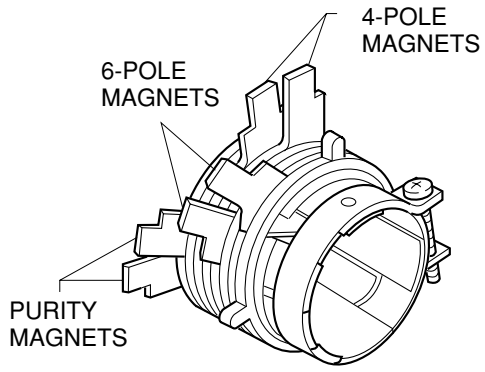
Adjust the Xv coil (on the deflection yoke) to correct misconvergence at both sides on screen.

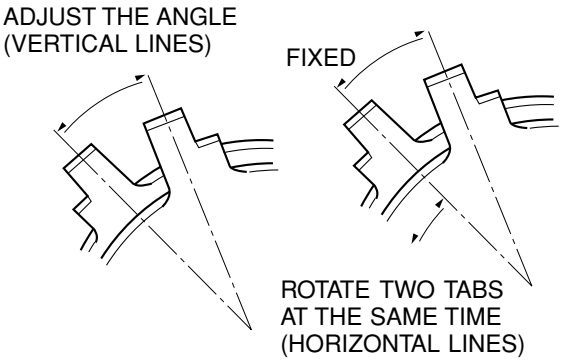
Use a hexagonal tip stick (plastic) to adjust the core of coil.

Clockwise Adjustment **Counterclockwise Adjustment**



X_V Cross Pattern View





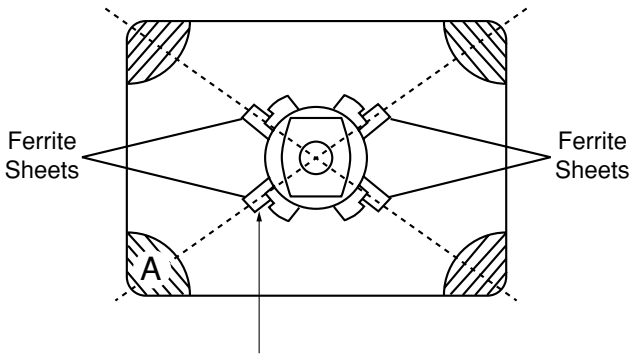
ADJUSTMENT OF MAGNETS

Figure 4.

■ **SCREEN-CORNER CONVERGENCE**

When the misconvergence is still evident on corners even though the above adjustment is done, use the ferrite sheet (Part No. 23993622) to correct misconvergence.

1. Put ferrite sheets into the space under the yoke. Decide such position that misconvergence becomes minimum, watching picture screen. (See figure below.)
2. Remove cover paper of ferrite sheet to stick it in the place on the tube. Put adhesive tapes on ferrite sheets to fix.



SERVICE MODE

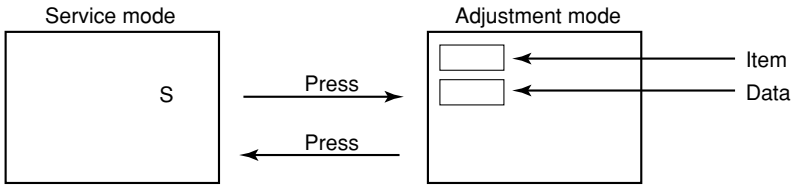
1. ENTERING TO SERVICE MODE

1) Press MUTE button once on Remote Control.
2) Press MUTE button again to keep pressing.
3) While pressing the MUTE button, press MENU button on TV set.

(Service mode display)

2. DISPLAYING THE ADJUSTMENT MENU

1) Press MENU button on TV.



3. KEY FUNCTION IN THE SERVICE MODE

The following key entry during display of adjustment menu provides special functions.

A single horizontal line ON/OFF:	TV (ANT)/VIDEO button (on TV)
Test signal selection :	TV (ANT)/VIDEO button (on Remote)
Selection of the adjustment items :	Channel ▲/▼ (on TV or Remote)
Change of the data value :	Volume ▲/▼ (on TV or Remote)
Adjustment menu mode ON/OFF :	MENU button (on TV)
Initialization of the memory (QA02) :	RECALL+Channel (▲) button on TV
Initialization of the self diagnostic data:	RECALL+Channel (▼) button on TV

“RCUT” selection :	1 button
“GCUT” selection :	2 button
“BCUT” selection :	3 button
“CNTX” selection :	4 button
“COLC” selection :	5 button
“TNTC” selection :	6 button
Test audio signal ON/OFF (1kHz):	8 button
Self diagnostic display ON/OFF :	9 button

4. SELECTING THE ADJUSTING ITEMS

1) Every pressing of CHANNEL ▲ button in the service mode changes the adjustment items in the order of table-2. (▼ button for reverse order)

Refer to table-2 for preset data of adjustment mode.
(See SETTING & ADJUSTING DATA on page 16)

5. ADJUSTING THE DATA

1) Pressing of VOLUME ▲ or ▼ button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

6. EXIT FROM SERVICE MODE

1) Pressing POWER button to turn off the TV once.

■ INITIALIZATION OF MEMORY DATA OF QA02

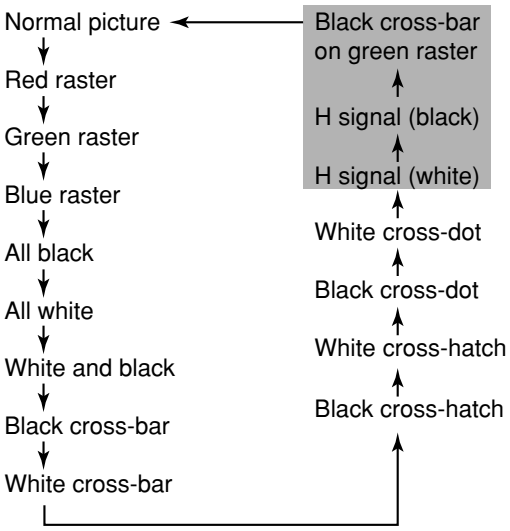
After replacing QA02, the following initialization is required.

1. Enter the service mode, then select any register item.
2. Press and hold the RECALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been complated.
3. Check the picture carefully. If necessary, adjust any adjustment item above. Perform "Programming Channel Memory" on the owner's manual.

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

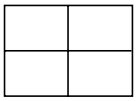
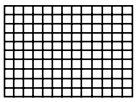
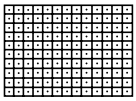
7. TEST SIGNAL SELECTION

1) Every pressing of TV/VIDEO button on the Remote Control in the Service mode changes the built-in test patterns on screen in the following order.



2) Press "8" button while any built-in test pattern to on the screen to output the 1 kHz sound. Press the button again to cut off the sound.

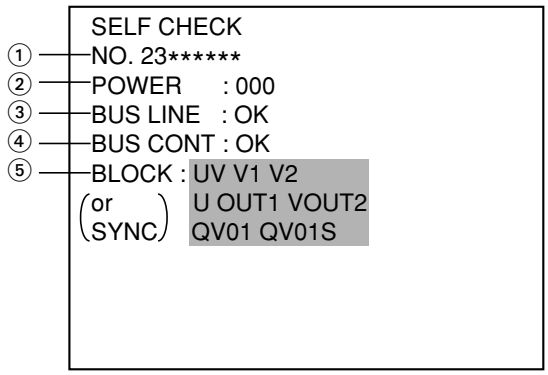
Note: If the video cable is connected to the VIDEO1 INPUT jack, the built-in pattern signals are not displayed.

Signals	Picture
• Red raster • Green raster • Blue raster • All Black • All White	
• Black & White	
• Black cross-bar • White cross-bar • Black cross-bar on green raster	
• Black cross-hatch • White cross-hatch	
• Black cross-dot • White cross-dot	
• H signal (white) • H signal (black)	

* The signals marked with ▒ are not usable to display in the Test signal for some model.

8. SELF DIAGNOSTIC FUNCTION

1) Press “9” button on Remote Control during display of adjustment menu in the service mode.
   The diagnosis will begin to check if interface among IC’s are executed properly.
2) During diagnosis, the following displays are shown.



① Part number of microprocessor (QA01)
② Operation number of protection circuit (current limiter) . . . . “000” is normal.
③ BUS line check
- “OK” ..... Normal
- “SCL-GND” or “NG” ..... SCL-GND short circuit
- “SDA-GND” or “NG” ..... SDA-GND short circuit
- “SCL-SDA” or “NG” ..... SCL-SDA short circuit

④ BUS line ACK (acknowledge) check
- “OK” ..... Normal
- Display of Location Number . . . . NG
  (Display example)
  “QA02 NG”, “H001 NG”, “Q501 NG” etc.
- Note: The indication of failure place is only one place though failure places are plural. When repair of a failure place finishes, the next failure place is indicated. (The order of priority of indication is left side.)

⑤ Sync. signal check
- Green display ..... Normal
- Cyan display ..... No check
- Red display ..... NG

UV	..... TV mode
V1	..... VIDEO 1 mode
V2	..... VIDEO 2 mode

***** The item marked with ▒ are not usable to display in the SELF DIAGNOSTIC FUNCTION for some model.

DESIGN MODE

1. ENTERING TO DESIGN MODE

1) Select the Service mode. 2) While pressing RECALL button on Remote and press MENU button on TV. 3) Press MENU button on TV.

(Design mode) (Adjustment mode)

When QA02 is initialized, items “OPT0” and “OPT1” of DESIGN MODE are set to the data of the representative model of this chassis family.
Therefore, because ON-SCREEN specification remains in the state of the representative of model. This model is required to reset the data of items “OPT0” and “OPT1”.

2. SELECTING THE ADJUSTING ITEMS

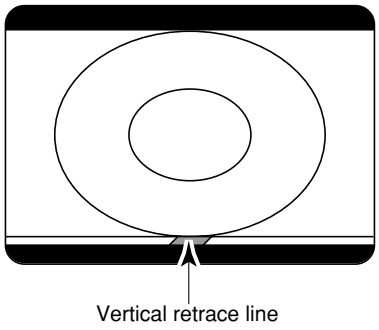
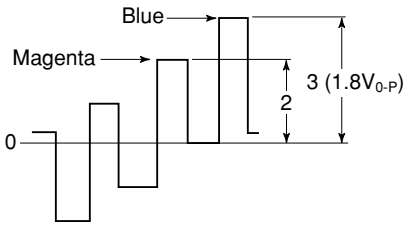
Every pressing of CHANNEL ▼ button in the design mode changes the adjustment items in the order of table-3.
(▲ button for reverse order)

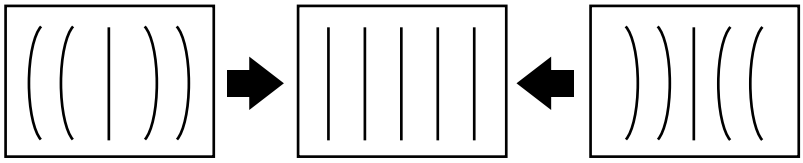
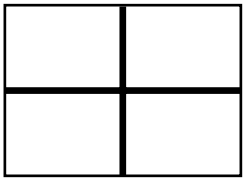
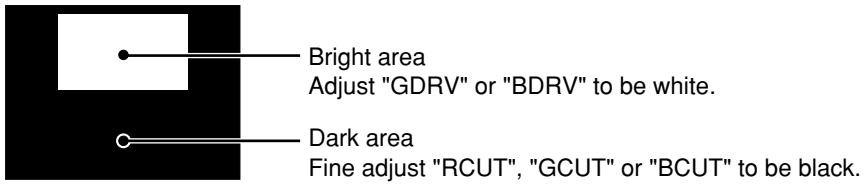
Refer to table-3 for data of design mode.
(See SETTING & ADJUSTING DATA on page 16)

3. ADJUSTING THE DATA

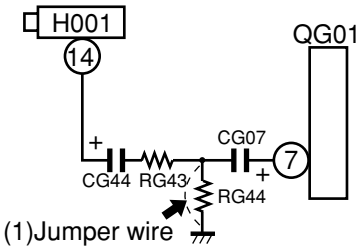
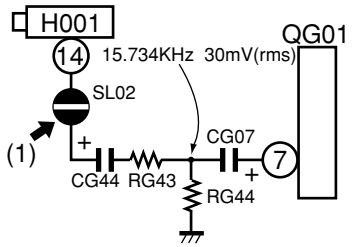
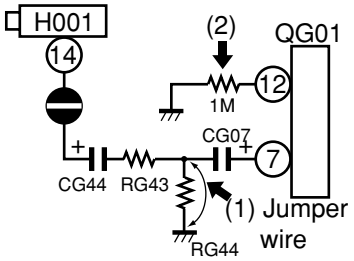
Pressing of VOLUME ▲ or ▼ button will change the value of data.

ELECTRICAL ADJUSTMENT

ITEM	ADJUSTMENT PROCEDURE
FOCUS VR ADJ	1. Enter the service mode, then select any register item. 2. Press the TV/VIDEO button on the Remote until the black cross-bar pattern appears on the screen. 3. Adjust the FOCUS control (on T461) for well defined scanning lines on the picture screen.
SUB-BRIGHTNESS (BRTC)	1. Constrict the picture height until the vertical retrace line appears adjusting the HEIGHT control on the MAIN board. 2. Adjust the CONTRAST to the minimum and BRIGHTNESS to the center. 3. Enter the service mode, then select "**BRTC**" register. 4. Adjust the data value so the belt of vertical retrace line just disappear. 5. Adjust the CONTRAST for the desired contrast. 6. Adjust the HEIGHT control. 
SUB-COLOR (COLC) SUB-TINT (TNTC)	1. Receive color-bar signal from color-bar generator. 2. Press the RESET button. 3. Connect oscilloscope to base of Q906 on CRT-D board. 4. Enter the service mode, then select "**COLC**". 5. Adjust the SUB-COLOR by pressing the VOLUME ▲ or ▼ button to achieve about $1V_{0\text{-}p}$ of blue bar. 6. Select "**TNTC**" register. 7. Adjust the data value to obtain the blue bar to magenta bar ratio of 3:2 as shown. 8. Select "**COLC**" register. 9. Adjust the data value to achieve $1.8V_{0\text{-}p}$ of blue bar on scope. 10. Check the picture with off-air signal. 
WIDTH (WID)	1. Call up the adjustment mode display, then select the item **WID**. 2. Press the VOLUME ▲ or ▼ button to get the picture so the left and right edges of raster begins to lack. 3. Press the VOLUME ▲ or ▼ button to advance the data by 7 steps. Note : Check the horizontal picture position is correct.

ITEM	ADJUSTMENT PROCEDURE
E-W PARABOLA (DPC)	1. Call up the adjustment mode display, then select the item **DPC**. 2. Press the TV/VIDEO button on Remote until the cross-hatch pattern appears on the screen. 3. Press the VOLUME ▲ or ▼ button to make vertical lines straight as shown below. 
HORIZONTAL POSITION (HPOS) VERTICAL POSITION (VPOS)	1. Call up the adjustment mode display, then select the item **HPOS** or **VPOS**. 2. Press the TV/VIDEO button on Remote until the white cross-bar or black cross-bar pattern appears on the screen. 3. Adjust the HORIZONTAL and VERTICAL position alternately by pressing the VOLUME ▲ or ▼ button for proper picture position. 4. Check the picture with off-air signal. 
HEIGHT (HIT)	1. Call up the adjustment mode display, then select the item **HIT**. 2. Press the VOLUME ▲ or ▼ button to get the picture so the top of raster begins to lack. 3. Press the VOLUME ▲ button to advance the data by 8 steps. Note : Check the vertical picture position is correct.
WHITE BALANCE (RCUT) (GCUT) (BCUT) (GDRV) (BDRV)	1. Adjust the CONTRAST control to the center, and BRIGHTNESS control to the maximum. 2. Call up the adjustment mode display, and press the TV/VIDEO button on Remote until the white and black pattern appears on the screen. 3. Adjust the following item with the CHANNEL ▲/▼ and VOLUME ▲/▼ buttons. RCUT ⟶ Data : 40H GCUT ⟶ Data : 40H BCUT ⟶ Data : 40H GDRV ⟶ Data : 80H BDRV ⟶ Data : 80H 4. Press the TV/VIDEO button on TV to display a single horizontal line on the screen. 5. Turn the SCREEN control (FBT) fully counterclockwise and gradually rotate clockwise until the first horizontal line appears slightly on the screen. 6. Press the TV/VIDEO button to display the normal picture. 7. Adjust the remaining two “?CUT” items (CHANNEL ▲/▼ → TV/VIDEO → VOLUME ▲/▼ in order) to obtain the slightly lighted horizontal line in the same levels of three (red, green, blue) colors. The line should be white if the adjustments are proper.  Bright area Adjust "GDRV" or "BDRV" to be white. Dark area Fine adjust "RCUT", "GCUT" or "BCUT" to be black.

MTS ADJUSTMENT (FOR N2N, N2F, N2ES CHASSIS)

No.	ITEM	INPUT SIGNAL	ADJUSTMENT PROCEDURE
1	ATTENUATOR (ATT)	• 1kHz 30% mod. → ANT terminal	1. Connect rms meter to pin 34 of QG01. 2. Display item **ATT** on screen. 3. Change data by VOLUME ▲/▼ buttons so that the reading of meter becomes value as close as 137mVrms.
2	STEREO VCO (STVC)	• No signal 	1. Short circuit RG44 with a jumper wire. 2. Display item **STVC** on screen. 3. Connect frequency counter to pin 34 of QG01. 4. Change data by VOLUME ▲/▼ buttons so that the reading of counter becomes value as close as 15.73kHz. 5. Remove the short jumper from RG44.
3	STEREO FILTER (STRF)	• 15.734kHz 30mV(rms) → Across Point between CG07 and RG44 	1. Unsolder the solder link SL02. 2. Display item **STRF** on screen. 3. Connect oscilloscope to pin 34 of QG01. 4. Change data by VOLUME ▲/▼ button to minimize AC output level on scope. 5. Resolder SL02.
4	STEREO SEPARATION (WBAN)	• STEREO 300Hz (30% mod.) R-channel only → ANT	1. Display item **WBAN** on screen. 2. Connect oscilloscope to pin 35 of QG01. 3. Change data by VOLUME ▲/▼ buttons so that 300Hz element on scope becomes minimum.
	(SPEC)	• STEREO 3kHz (30% mod.) R-channel only → ANT	1. Display item **SPEC** on screen. 2. Connect oscilloscope to pin 35 of QG01. 3. Change data by VOLUME ▲/▼ buttons so that 3KHz element on scope becomes minimum.
5	SAP VCO (SAVC)	• No signal 	1. Shortcircuit RG44 with a short jumper. 2. Connect 1Mohm resistor between pin 12 of QG01 and ground. 3. Display item **SAVC** on screen. 4. Connect frequency counter to pin 34 of QG01. 5. Change data by VOLUME ▲/▼ buttons so that the reading of counter becomes value as close as 78.67kHz. 6. Remove the short jumper and 1M ohm resistor.

CIRCUIT CHECKS

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. Checking should be done following the steps below.

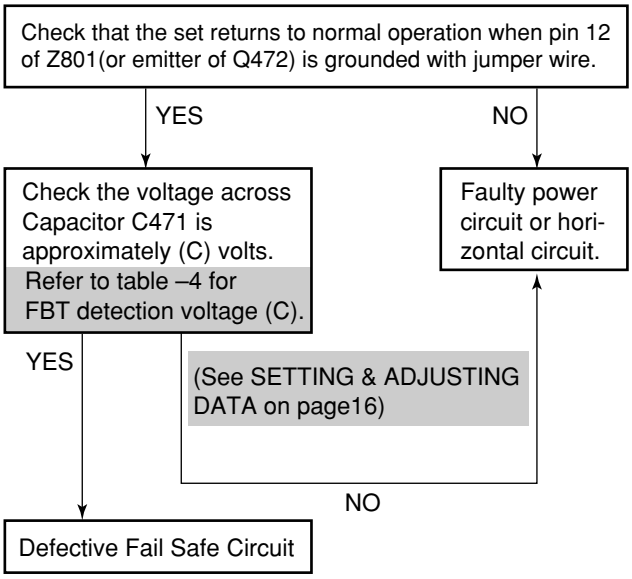
1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage must be measured below (B) kV.
   Refer to table-1 for high voltage (B).
   (See SETTING & ADJUSTING DATA on page 16)
4. Vary the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

FS CIRCUIT CHECK

The Fail Safe (FS) circuit check is indispensable for the final check in servicing. Checking should be done following the steps below.

1. Turn the receiver on and press the RESET button.
2. Temporarily short TP-(R) and TP-(X) with a jumper wire. Raster and sound will disappear.
3. The receiver must remain in this state even after removing the jumper wire. This is the evidence that the FS circuit is functioning properly.
4. To obtain a picture again, temporarily turn the receiver off and allow the FS circuit more than 5 seconds to reset. Then turn the power switch on to produce a normal picture.

Troubleshooting Guide for Fail Safe Circuit


Check that the set returns to normal operation when pin 12 of Z801(or emitter of Q472) is grounded with jumper wire.
YES
NO
Check the voltage across Capacitor C471 is approximately (C) volts.
Refer to table –4 for FBT detection voltage (C).
Faulty power circuit or horizontal circuit.
YES
(See SETTING & ADJUSTING DATA on page16)
NO
Defective Fail Safe Circuit

CHAPTER 2 SPECIFIC INFORMATIONS

SETTING & ADJUSTING DATA

【SAFETY INSTRUCTIONS】

		32"
HIGH VOLTAGE AT ZERO BEAM:	(A)	31.2kV
MAX HIGH VOLTAGE:	(B)	32.6kV

Table-1

【SERVICE MODE】

ADJUSTING ITEMS AND DATAS IN THE SERVICE MODE:

Item	Name of adjustment	Preset	Data
RCUT	R CUTOFF	40H	←
GCUT	G CUTOFF	40H	←
BCUT	B CUTOFF	40H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
SCNT	SUB-CONTRAST	0AH	09H
BRTC	SUB-BRIGHT	40H	43H
COLC	SUB-COLOR	3AH	3DH
TNTC	SUB-TINT	44H	48H
SAVC	SAP VCO	20H	25H
ATT	ATTENUATOR	20H	0FH
STVC	STEREO VCO	20H	21H
STRF	STEREO FILTER	20H	21H
SPEC	SPECTRAL	20H	1DH

Item	Name of adjustment	Preset	Data
WBAN	STEREO SEPARATION	20H	16H
HPOS	HORIZ. POSITION	16H	19H
VPOS	VERT. POSITION	03H	←
HIT	HEIGHT	26H	1CH
LIN	V-LINEARITY	07H	←
VSC	V-S CORRECTION	02H	03H
WID	PICTURE WIDTH	35H	25H
DPC	E-W PARABOLA (DPC)	17H	13H
CNR	E-W CORNER	09H	03H
TRAP	TRAPEZIUM	08H	07H
VPS	V-SHIFT	01H	←
VCP	V-COMPENSATION	03H	←
HCP	H-COMPENSATION	00H	←
VFC	V-F CORRECTION	0FH	←

Table-2

【DESIGN MODE】

ADJUSTING ITEMS AND DATAS IN THE DESIGN MODE:

Item	Name of adjustment	Preset Data	Data	Remarks
OPT1	OPTION1	84H	84H	
OPT2	OPTION2	01H	00H	

Table-3

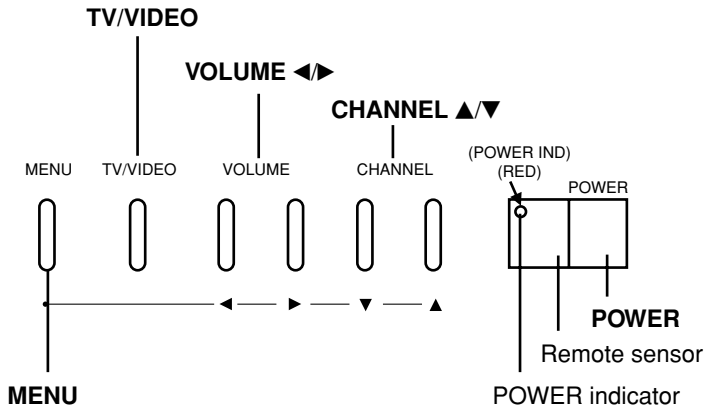
【CIRCUIT CHECKS】

FBT DETECTION VOLTAGE	(C)	22.3 V

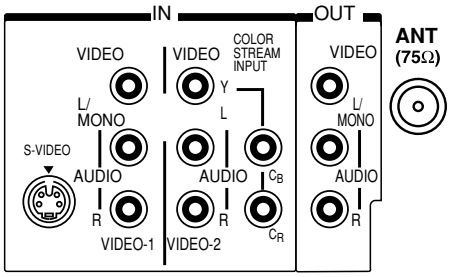
Table-4

LOCATION OF CONTROLS

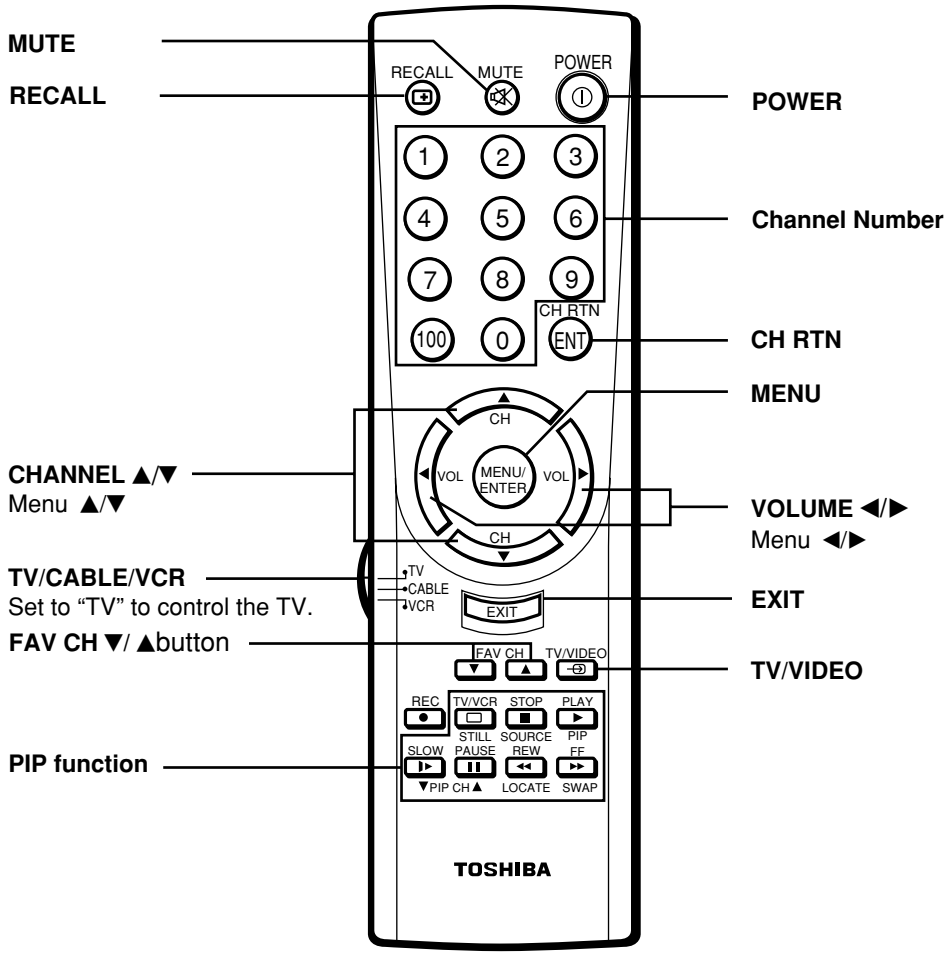
Front Control



Back Term.



Remote Control



PROGRAMMING CHANNEL MEMORY

The channel memory is the list of TV channel numbers your TV will stop on when you press the CHANNEL ▲ or ▼ button.
First, use the TV/CABLE and CH PROGRAM functions to preset all active channels in your area.
If necessary, arrange the preset channels with the ADD/ERASE functions so that you can tune into only desired channels.

TV/CABLE function

1. Press **POWER** to turn on the TV.
2. Press **MENU** repeatedly until the Setup menu is displayed on the screen.
3. Press ▼ or ▲ repeatedly until "TV/CABLE" is displayed in purple.
4. Press ► or ◄ until the mode that corresponds to your TV signal system is displayed in purple.
   TV: TV broadcasts signal
   (VHF channels 2 through 13 and UHF channel 14 through 69)
   Cable: Cable TV signals.
   (Cable channels 1 through 125)

CH PROGRAM function

1. Press **MENU** repeatedly until the Setup menu is displayed on the screen.
2. Press ▼ or ▲ repeatedly until "CH PROGRAM" is displayed in purple.
3. Press ► or ◄ to start channel programming.
   The TV will automatically cycle through all the TV or CABLE channels depending on the mode selected, and store active channels in the channel memory.
3. When channel programming is complete, you will see the message on the screen.
4. Press **CHANNEL** ▲ or ▼ to make sure the channel programming has been done properly.

ADD/ERASE function

After performing the CH PROGRAM function, you can add or erase specific channels.

1. Select the channel you want to erase using the **CHANNEL** ▲ or ▼ button, or select the channel you want to add using the **Channel Number** buttons.
2. Press **MENU** repeatedly until the Setup menu is displayed on the screen.
3. Press ▼ or ▲ repeatedly until "ADD/ERASE" is displayed purple.
4. Press ► or ◄ :
   To erase the channel
   Press the button until "ERASE" is displayed in purple indicating that the channel has been erased from the memory.

   To add the channel
   Press the button until "ADD" is displayed in purple indicating that the channel has been memorized.
5. Repeat steps 1 to 4 for other channels.

You have now completed the channel programming.

*Please refer to owner's manual in detail.

CHASSIS AND CABINET REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate com-ponents which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE. Do not degrade the safety of the receiver through improper servicing.

NOTICE:
- *The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.*
- *The PC board assembly with * mark is no longer available after the end of the production.*

Model : 32A32

Capacitors	CD	:	Ceramic Disk	PF	:	Plastic Film	EL	: Electrolytic
Resistors	CF	:	Carbon Film	CC	:	Carbon Composition	MF	: Metal Film
	OMF	:	Oxide Metal Film	VR	:	Variable Resistor	FR	: Fusible Resistor

(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Parts No.	Description
CAPACITORS		
C102	24792471	ELECTROLYTIC, 6.3V 470UF M
C105	24212102	CERAMIC DISC, 50V B 1000PF K
C106	24797479	ELECTROLYTIC, 50V 4.7UF M
C107	24763221	ELECTROLYTIC, 16V 220UF M
C201	24539104	PLASTIC FILM, 50V 0.1UF J
C204	24797010	ELECTROLYTIC, 50V 1UF M
C205	24794100	ELECTROLYTIC, 16V 10UF M
C216	24794100	ELECTROLYTIC, 16V 10UF M
C220	24539474	PLASTIC FILM, 50V 0.47UF J
C221	24109103	CERAMIC CHIP, 50V B 0.01UF K
C222	24109103	CERAMIC CHIP, 50V B 0.01UF K
C223	24109103	CERAMIC CHIP, 50V B 0.01UF K
C224	24539104	PLASTIC FILM, 50V 0.1UF J
C225	24539104	PLASTIC FILM, 50V 0.1UF J
C226	24539104	PLASTIC FILM, 50V 0.1UF J
C245	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
C261	24539104	PLASTIC FILM, 50V 0.1UF J
C262	24539104	PLASTIC FILM, 50V 0.1UF J
C263	24539104	PLASTIC FILM, 50V 0.1UF J
C271	24109561	CERAMIC CHIP, 50V B 560PF K
C305	24617912	ELECTROLYTIC, 50V 2.2UF K 3A LI
C306	24764222	ELECTROLYTIC CE04G 25V 2200UF M
C307	24082272	PLASTIC FILM CQ922 M 100V 47000PF J
C308	24668221	ELECTROLYTIC, 35V 220UF M 3A
C309	24109102	CERAMIC CHIP, 50V B 1000PF K
C310	24766102	ELECTROLYTIC CE04G 50V 1000UF M
C311	24214102	CERAMIC DISC, 500V B 1000PF K
C313	24082057	PLASTIC FILM, 100V 220000PF J
C314	24591222	PLASTIC FILM, 50V 2200PF J
C317	24214471	CERAMIC DISC, 500V B 470PF K
C318	24109102	CERAMIC CHIP, 50V B 1000PF K
C319	24109102	CERAMIC CHIP, 50V B 1000PF K
C320	24797101	ELECTROLYTIC, 50V 100UF M
C323	24539474	PLASTIC FILM, 50V 0.47UF J
C325	24539683	PLASTIC FILM, 50V 0.068UF J
C326	24539104	PLASTIC FILM, 50V 0.1UF J
C327	24617915	ELECTROLYTIC, 50V 1UF K 3A LI
C337	24797229	ELECTROLYTIC, 50V 2.2UF M

Location No.	Parts No.	Description
C370	24794101	ELECTROLYTIC, 16V 100UF M
C371	24794100	ELECTROLYTIC, 16V 10UF M
C403	24539103	PLASTIC FILM, 50V 0.01UF J
C404	24797010	ELECTROLYTIC, 50V 1UF M
C407	24539104	PLASTIC FILM, 50V 0.1UF J
C412	24214472	CERAMIC DISK CK45 B 500V 4700PF K
C413	24214821	CERAMIC DISC, 500V B 820PF K
C415	24539224	PLASTIC FILM, 50V 0.22UF J
C416	24678010	ELECTROLYTIC, 200V 1UF M 3A
C417	24214331	CERAMIC DISC, 500V B 330PF K
C421	24539334	PLASTIC FILM, 50V 0.33UF J
C430	24109103	CERAMIC CHIP, 50V B 0.01UF K
C431	24794101	ELECTROLYTIC, 16V 100UF M
C438	24092344	CERAMIC DISC, 2KV 820PF K
⚠ C439	24503125	PLASTIC CAP T 400V 753J
⚠ C442	24082924	PLASTIC FILM CF92 T 315V 0.56UF J
⚠ C443	24082963	PLASTIC FILM, 1500VH 9100PF H
⚠ C444	24082964	PLASTIC FILM, 1500VH 10000PF H
C445	24082050	PLASTIC FILM CF922 M 100V 56000PF J
C446	24679100	ELECTROLYTIC, 250V 10UF M 3A
C448	24073118	04H 160V 330M
C449	24794102	ELECTROLYTIC, 16V 1000UF M
C453	24539334	PLASTIC FILM, 50V 0.33UF J
C457	24591222	PLASTIC FILM, 50V 2200PF J
C463	24212152	CERAMIC DISC, 50V B 1500PF K
C464	24640872	ELECTROLYTIC CE04R 100V 10UF M 3A
C466	24567104	PLASTIC FILM, 50V 0.1UF J
⚠ C467	24503160	PLASTIC CAP T 630V 433J
C471	24797479	ELECTROLYTIC, 50V 4.7UF M
C474	24794100	ELECTROLYTIC, 16V 10UF M
C477	24539104	PLASTIC FILM, 50V 0.1UF J
C478	24539563	PLASTIC FILM, 50V 0.056UF J
C480	24747220	ELECTROLYTIC CE04HS 50V 22UF M 7L 3A
C481	24539474	PLASTIC FILM, 50V 0.47UF J
C482	24797478	ELECTROLYTIC, 50V 0.47UF M
C483	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
C499	24212102	CERAMIC DISC, 50V B 1000PF K
C501	24109102	CERAMIC CHIP, 50V B 1000PF K
C504	24591222	PLASTIC FILM, 50V 2200PF J

Location No.	Parts No.	Description
C505	24105130	CERAMIC CHIP, 50V CH 13PF J
C510	24109103	CERAMIC CHIP, 50V B 0.01UF K
C511	24794101	ELECTROLYTIC, 16V 100UF M
C512	24206228	ELECTROLYTIC, 50V 0.22UF M 7L 3A
C582	24109103	CERAMIC CHIP, 50V B 0.01UF K
C583	24762471	ELECTROLYTIC, 10V 470UF M
C612	24794470	ELECTORLYTIC, 16V 47UF M
C613	24109103	CERAMIC CHIP, 50V B 0.01UF K
C661	24212102	CERAMIC DISC, 50V B 1000PF K
C662	24212102	CERAMIC DISC, 50V B 1000PF K
C663	24794100	ELECTROLYTIC, 16V 10UF M
C664	24796101	ELECTROLYTIC, 35V 100UF M
C671	24667470	ELECTROLYTIC, 25V 47UF M 3A
C672	24667470	ELECTROLYTIC, 25V 47UF M 3A
C673	24797229	ELECTROLYTIC, 50V 2.2UF M
C676	24503041	PLASTIC FILM , 63V 0.1UF J
C677	24503041	PLASTIC FILM , 63V 0.1UF J
C678	24797229	ELECTROLYTIC, 50V 2.2UF M
C679	24667470	ELECTROLYTIC, 25V 47UF M 3A
C681	24795102	ELECTROLYTIC, 25V 1000UF M
C683	24795102	ELECTROLYTIC, 25V 1000UF M
C801	24503002	PLASTIC FILM, AC275V 0.22UF M
C802	24503001	PLASTIC FILM, AC275V 0.1UF M
C805	24092623	CERAMIC DISC CKS45F 250V 10000PFZ
C806	24092623	CERAMIC DISC CKS45F 250V 10000PFZ
C808	24797470	ELECTROLYTIC, 50V 47UF M
C810	24086061	ELECTROLYTIC, 200V 470UF M 3F
C815	24092581	CERAMIC DISC, AC250V E 1000PF M
C817	24092339	CERAMIC DISC, 2KV 330PF K
C818	24082402	PLASTIC FILM, 1250VH 2200PF H
C819	24795221	ELECTROLYTIC, 25V 220UF M
C821	24214471	CERAMIC DISC, 500V B 470PF K
C822	24092583	CERAMIC DISC, AC250V E 2200PF M
C823	24092583	CERAMIC DISC, AC250V E 2200PF M
C825	24212471	CERAMIC DISC, 50V B 470PF K
C829	24590182	PLASTIC FILM CQ922M 50V 1800PF J
C832	24539334	PLASTIC FILM, 50V 0.33UF J
C840	24797010	ELECTROLYTIC, 50V 1UF M
C842	24792101	ELECTROLYTIC, 6.3V 100UF M
C884	24640018	ELECTROLYTIC, 160V 220UF
C885	24214471	CERAMIC DISC, 500V B 470PF K
C889	24796222	ELECTROLYTIC, 35V 2200UF M
C893	24092339	CERAMIC DISC, 2KV 330PF K
C898	24539474	PLASTIC FILM, 50V 0.47UF J
C902	24092345	CERAMIC DISC, 2KV 0.001UF K
C904	24436391	CERAMIC DISC, 50V SL 390PF J
C905	24436391	CERAMIC DISC, 50V SL 390PF J
C906	24436391	CERAMIC DISC, 50V SL 390PF J
C909	24679220	ELECTROLYTIC, 250V 22UF M 3A
C910	24797478	ELECTROLYTIC, 50V 0.47UF M
C911	24794100	ELECTROLYTIC, 16V 10UF M
C912	24763471	ELECTROLYTIC, 16V 470UF M
C913	24794100	ELECTROLYTIC, 16V 10UF M
C914	24232103	CERAMIC DISC, 50V F 10000PF Z
C920	24214101	CERAMIC DISC, 500V B 100PF K
CA32	24100104	CERAMIC CHIP, 25V F 100000PF Z
CA37	24105101	CERAMIC CHIP, 50V CH 100PF J
CA38	24105101	CERAMIC CHIP, 50V CH 100PF J
CA42	24794100	ELECTROLYTIC, 16V 10UF M
CA43	24109103	CERAMIC CHIP, 50V B 0.01UF K
CA44	24109103	CERAMIC CHIP, 50V B 0.01UF K
CA68	24794100	ELECTROLYTIC, 16V 10UF M
CA69	24109103	CERAMIC CHIP, 50V B 0.01UF K
CB01	24794470	ELECTORLYTIC, 16V 47UF M
CB48	24105101	CERAMIC CHIP, 50V CH 100PF J

Location No.	Parts No.	Description
CB60	24085944	ELECTROLYTIC, NONPOLAR, 50V 2.2UF M 11L
CB61	24591102	PLASTIC FILM, 50V 1000PF J
CB62	24109561	CERAMIC CHIP, 50V B 560PF K
CB63	24109122	CERAMIC CHIP CC73B 50V 1200PF K
CB64	24763471	ELECTROLYTIC, 16V 470UF M
CB65	24100104	CERAMIC CHIP, 25V F 100000PF Z
CG01	24794101	ELECTROLYTIC, 16V 100UF M
CG02	24794220	ELECTROLYTIC, 16V 22UF M
CG03	24539104	PLASTIC FILM, 50V 0.1UF J
CG04	24109103	CERAMIC CHIP, 50V B 0.01UF K
CG05	24797010	ELECTROLYTIC, 50V 1UF M
CG06	24797479	ELECTROLYTIC, 50V 4.7UF M
CG07	24797229	ELECTROLYTIC, 50V 2.2UF M
CG08	24109473	CERAMIC CHIP, 25V B 47000PFK
CG09	24797478	ELECTROLYTIC, 50V 0.47UF M
CG10	24539104	PLASTIC FILM, 50V 0.1UF J
CG12	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
CG13	24088907	TA SOLID ELEC. CHIP, 16V 3.3UF M A-CAE
CG14	24797010	ELECTROLYTIC, 50V 1UF M
CG16	24088098	TA SOLID ELEC., 16V 10UF M B2-CA
CG17	24797010	ELECTROLYTIC, 50V 1UF M
CG18	24797010	ELECTROLYTIC, 50V 1UF M
CG19	24797479	ELECTROLYTIC, 50V 4.7UF M
CG20	24797010	ELECTROLYTIC, 50V 1UF M
CG25	24797479	ELECTROLYTIC, 50V 4.7UF M
CG26	24797479	ELECTROLYTIC, 50V 4.7UF M
CG27	24109223	CERAMIC CHIP, 25V B 0.022UF K
CG28	24797229	ELECTROLYTIC, 50V 2.2UF M
CG29	24591102	PLASTIC FILM, 50V 1000PF J
CG30	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
CG31	24797229	ELECTROLYTIC, 50V 2.2UF M
CG32	24591102	PLASTIC FILM, 50V 1000PF J
CG33	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
CG34	24797229	ELECTROLYTIC, 50V 2.2UF M
CG35	24797229	ELECTROLYTIC, 50V 2.2UF M
CG42	24797010	ELECTROLYTIC, 50V 1UF M
CG44	24794100	ELECTROLYTIC, 16V 10UF M
CM51	24539104	PLASTIC FILM, 50V 0.1UF J
CM52	24108331	CERAMIC CHIP, 50V SL 330PF J
CM58	24539104	PLASTIC FILM, 50V 0.1UF J
CR01	24100104	CERAMIC CHIP, 25V F 100000PF Z
CR02	24100104	CERAMIC CHIP, 25V F 100000PF Z
CR03	24100104	CERAMIC CHIP, 25V F 100000PF Z
CS02	24797229	ELECTROLYTIC, 50V 2.2UF M
CS04	24797229	ELECTROLYTIC, 50V 2.2UF M
CS08	24797229	ELECTROLYTIC, 50V 2.2UF M
CS10	24797229	ELECTROLYTIC, 50V 2.2UF M
CS40	24797010	ELECTROLYTIC, 50V 1UF M
CS42	24797010	ELECTROLYTIC, 50V 1UF M
CS43	24109331	CERAMIC CHIP CK73B 50V 330pF K
CS44	24109331	CERAMIC CHIP CK73B 50V 330pF K
CS45	24109331	CERAMIC CHIP CK73B 50V 330pF K
CS46	24109331	CERAMIC CHIP CK73B 50V 330pF K
CS51	24109102	CERAMIC CHIP, 50V B 1000PF K
CS52	24109102	CERAMIC CHIP, 50V B 1000PF K
CS70	24794220	ELECTROLYTIC, 16V 22UF M
CS71	24794220	ELECTROLYTIC, 16V 22UF M
CV01	24797229	ELECTROLYTIC, 50V 2.2UF M
CV03	24206108	ELECTROLYTIC, 50V 0.1UF M 7L 3A
CV05	24109103	CERAMIC CHIP, 50V B 0.01UF K
CV07	24797229	ELECTROLYTIC, 50V 2.2UF M
CV09	24539104	PLASTIC FILM, 50V 0.1UF J
CV10	24109103	CERAMIC CHIP, 50V B 0.01UF K
CV11	24109103	CERAMIC CHIP, 50V B 0.01UF K

Location No.	Parts No.	Description
CV12	24539104	PLASTIC FILM, 50V 0.1UF J
CV36	24794220	ELECTROLYTIC, 16V 22UF M
CV38	24763471	ELECTROLYTIC, 16V 470UF M
CV39	24109103	CERAMIC CHIP, 50V B 0.01UF K
CV41	24797229	ELECTROLYTIC, 50V 2.2UF M
CV60	24763471	ELECTROLYTIC, 16V 470UF M
CV61	24763471	ELECTROLYTIC, 16V 470UF M
CZ01	24794101	ELECTROLYTIC, 16V 100UF M
CZ02	24109103	CERAMIC CHIP, 50V B 0.01UF K
CZ03	24794100	ELECTROLYTIC, 16V 10UF M
CZ04	24105181	CERAMIC CHIP, 50V CH 180PF J
CZ05	24108620	CHIP CERA CAP SL 50V 620J
CZ06	24105330	CERAMIC CHIP, 50V CH 33PF J
CZ08	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ09	24109103	CERAMIC CHIP, 50V B 0.01UF K
CZ10	24794101	ELECTROLYTIC, 16V 100UF M
CZ12	24105101	CERAMIC CHIP, 50V CH 100PF J
CZ13	24105121	CERAMIC CHIP, 50V CH 120PF J
CZ14	24105151	CERAMIC CHIP, 50V CH 150PF J
CZ15	24109102	CERAMIC CHIP, 50V B 1000PF K
CZ16	24105330	CERAMIC CHIP, 50V CH 33PF J
CZ28	24212102	CERAMIC DISC, 50V B 1000PF K
CZ29	24792101	ELECTROLYTIC, 6.3V 100UF M
CZ30	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ31	24105100	CERAMIC CHIP, 50V CH 10PF D
CZ32	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ33	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ34	24794101	ELECTROLYTIC, 16V 100UF M
CZ35	24792101	ELECTROLYTIC, 6.3V 100UF M
CZ36	24792101	ELECTROLYTIC, 6.3V 100UF M
CZ37	24109103	CERAMIC CHIP, 50V B 0.01UF K
CZ39	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ41	24109103	CERAMIC CHIP, 50V B 0.01UF K
CZ42	24792101	ELECTROLYTIC, 6.3V 100UF M
CZ43	24105181	CERAMIC CHIP, 50V CH 180PF J
CZ44	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ45	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ46	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ47	24100104	CERAMIC CHIP, 25V F 100000PF Z
CZ48	24109103	CERAMIC CHIP, 50V B 0.01UF K
CZ49	24105330	CERAMIC CHIP, 50V CH 33PF J
CZ50	24797229	ELECTROLYTIC, 50V 2.2UF M
CZ57	24105181	CERAMIC CHIP, 50V CH 180PF J
CZ58	24105560	CERAMIC CHIP, 50V CH 56PF J
CZ96	24105270	CERAMIC CHIP, 50V CH 27PF J
RESISTORS		
R101	24553223	OXIDE METAL FILM, 1W 22K OHM J
R203	24011474	CHIP, METAL FILM, 1/20W 470K OHM J
R207	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R208	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R209	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R216	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R228	24553683	OXIDE METAL FILM, 1W 68K OHM J
R238	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R239	24011224	CHIP, METAL FILM, 1/20W 220K OHM J
R240	24011562	CHIP, METAL FILM, 1/20W 5.6K OHM J
R241	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R245	24366104	CARBON FILM, 1/6W 100K OHM J
R261	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R262	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R263	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R264	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R265	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R266	24011102	CHIP, METAL FILM, 1/20W 1K OHM J

Location No.	Parts No.	Description
R271	24366471	CARBON FILM, 1/6W 470 OHM J
R272	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R301	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R303	24321109	OXIDE METAL FILM, 1/2W 1 OHM J
R304	24011393	CHIP, METAL FILM, 1/20W 39K OHM J
R305	24322688	OXIDE METAL FILM, 1W 0.68 OHM J
R306	24366563	CARBON FILM, 1/6W 56K OHM J
R307	24011474	CHIP, METAL FILM, 1/20W 470K OHM J
R308	24382821	OXIDE METAL FILM, 1W 82 OHM J
R310	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R311	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
R313	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R314	24011105	CHIP, METAL FILM, 1/20W 1M OHM J
R315	24011824	CHIP, METAL FILM, 1/20W 820K OHM J
R317	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R327	24339569	OXIDE METAL FILM, 2W 5.6 OHM J
R328	24011824	CHIP, METAL FILM, 1/20W 820K OHM J
R336	24383391	OXIDE METAL FILM, 2W 390 OHM J
R360	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R361	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R370	24321109	OXIDE METAL FILM, 1/2W 1 OHM J
R371	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R372	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
R373	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R374	24366183	CARBON FILM, 1/6W 18K OHM J
R401	24011391	CHIP, METAL FILM, 1/20W 390 OHM J
R403	24011562	CHIP, METAL FILM, 1/20W 5.6K OHM J
R405	24382682	OXIDE METAL FILM, 1W 6.8K OHM J
R406	24366473	CARBON FILM, 1/6W 47K OHM J
R408	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R410	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R411	24366561	CARBON FILM, 1/6W 560 OHM J
R415	24553272	OXIDE METAL FILM, 1W 2.7K OHM J
R416	24510392	CERAMIC COVERED G 5W 3.9K J
R418	24383181	OXIDE METAL FILM, 2W 180 OHM J
R429	24366104	CARBON FILM, 1/6W 100K OHM J
R430	24366102	CARBON FILM, 1/6W 1K OHM J
R431	24366103	CARBON FILM, 1/6W 10K OHM J
R432	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R441	24532102	FUSIBLE, 1W 1K OHM J
R448	24338478	OXIDE METAL FILM, 1W 0.47 OHM J
R455	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R457	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R460	24366472	CARBON FILM, 1/6W 4.7K OHM J
R461	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R463	24322479	METAL FILM, 1W 4R7 J
R464	24366102	CARBON FILM, 1/6W 1K OHM J
R465	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R466	24366103	CARBON FILM, 1/6W 10K OHM J
R467	24011474	CHIP, METAL FILM, 1/20W 470K OHM J
R472	24381270	OXIDE FILM, 1/2W 27 J
R473	24366473	CARBON FILM, 1/6W 47K OHM J
R474	24366184	CARBON FILM, 1/6W 18OK OHM J
⚠ R475	24011391	CHIP, METAL FILM, 1/20W 390 OHM J
R476	24366823	CARBON FILM, 1/6W 82K OHM J
R477	24011273	CHIP, METAL FILM, 1/20W 27K OHM J
⚠ R478	24327133	METAL FILM, 1/4W 13K OHM F
R481	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
⚠ R482	24327472	METAL FILM, 1/4W 4R7K F
R485	24338568	OXIDE METAL FILM, 1W 0.56 OHM J
R486	24552820	OXIDE METAL FILM, 1/2W 82 OHM J
R487	24552301	OXIDE METAL FILM, 1/2W 300 OHM J
R488	24327183	METAL FILM, 1/4W 18K OHM F
R489	24327183	METAL FILM, 1/4W 18K OHM F
R490	24011102	CHIP, METAL FILM, 1/20W 1K OHM J

Location No.	Parts No.	Description
R493	24366102	CARBON FILM, 1/6W 1K OHM J
R494	24366471	CARBON FILM, 1/6W 470 OHM J
R495	24366561	CARBON FILM, 1/6W 560 OHM J
R501	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R502	24366101	CARBON FILM, 1/6W 100 OHM J
R503	24366101	CARBON FILM, 1/6W 100 OHM J
R511	24366471	CARBON FILM, 1/6W 470 OHM J
R612	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R613	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R614	24366102	CARBON FILM, 1/6W 1K OHM J
R663	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R664	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R667	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R668	24366103	CARBON FILM, 1/6W 10K OHM J
R669	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R674	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R676	24366229	CARBON FILM, 1/6W 2.2 OHM J
R677	24366229	CARBON FILM, 1/6W 2.2 OHM J
R678	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R808	24019474	THERMISTOR, PTC THERMISTOR AC125V 1R5 M
R810	24568828	CERAMIC COVERED G 7W 0.82 K
R814	24366182	CARBON FILM, 1/6W 1.8K OHM J
R818	24510150	CERAMIC COVERED G 5W 15 J
R820	24322208	OXIDE METAL FILM, 1W 0.2 OHM J
R821	24321109	OXIDE METAL FILM, 1/2W 1 OHM J
R822	24366152	CARBON FILM, 1/6W 1.5K OHM J
R823	24366182	CARBON FILM, 1/6W 1.8K OHM J
R829	24004945	METAL FILM, 1W R18 J
R831	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R835	24552681	OXIDE METAL FILM, 1/2W 680 OHM J
R861	24366104	CARBON FILM, 1/6W 100K OHM J
R862	24366104	CARBON FILM, 1/6W 100K OHM J
R898	24010001	CARBON FILM, 1/2W 3.9M J
R901	24552102	OXIDE METAL FILM, 1/2W 1K OHM J
R902	24552102	OXIDE METAL FILM, 1/2W 1K OHM J
R903	24552102	OXIDE METAL FILM, 1/2W 1K OHM J
R904	24366103	CARBON FILM, 1/6W 10K OHM J
R905	24366101	CARBON FILM, 1/6W 100 OHM J
R914	24366561	CARBON FILM, 1/6W 560 OHM J
R915	24366301	CARBON FILM, 1/6W 300 OHM J
R916	24366820	CARBON FILM, 1/6W 82 OHM J
R917	24366102	CARBON FILM, 1/6W 1K OHM J
R918	24366102	CARBON FILM, 1/6W 1K OHM J
R920	24000880	FUSIBLE, 1W 5.1 OHM J
R921	24366561	CARBON FILM, 1/6W 560 OHM J
R922	24366301	CARBON FILM, 1/6W 300 OHM J
R924	24366820	CARBON FILM, 1/6W 82 OHM J
R927	24366102	CARBON FILM, 1/6W 1K OHM J
R928	24366561	CARBON FILM, 1/6W 560 OHM J
R929	24366301	CARBON FILM, 1/6W 300 OHM J
R930	24366820	CARBON FILM, 1/6W 82 OHM J
R932	24366272	CARBON FILM, 1/6W 2.7K OHM J
R934	24366271	CARBON FILM, 1/6W 270 OHM J
R935	24366102	CARBON FILM, 1/6W 1K OHM J
R936	24366750	CARBON FILM, 1/6W 75 OHM J
R942	24366562	CARBON FILM, 1/6W 5.6K OHM J
R943	24366562	CARBON FILM, 1/6W 5.6K OHM J
R944	24366562	CARBON FILM, 1/6W 5.6K OHM J
R960	24383153	OXIDE METAL FILM, 2W 15K OHM J
R961	24383153	OXIDE METAL FILM, 2W 15K OHM J
R962	24383153	OXIDE METAL FILM, 2W 15K OHM J
R968	24366150	CARBON FILM, 1/6W 15 OHM J
R977	24366122	CARBON FILM, 1/6W 1.2K OHM J
RA03	24366102	CARBON FILM, 1/6W 1K OHM J

Location No.	Parts No.	Description
RA04	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA06	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA07	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA08	24366102	CARBON FILM, 1/6W 1K OHM J
RA09	24366102	CARBON FILM, 1/6W 1K OHM J
RA10	24366102	CARBON FILM, 1/6W 1K OHM J
RA15	24366102	CARBON FILM, 1/6W 1K OHM J
RA16	24366102	CARBON FILM, 1/6W 1K OHM J
RA17	24366102	CARBON FILM, 1/6W 1K OHM J
RA18	24366102	CARBON FILM, 1/6W 1K OHM J
RA21	24366472	CARBON FILM, 1/6W 4.7K OHM J
RA22	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA23	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA24	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA25	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA26	24366102	CARBON FILM, 1/6W 1K OHM J
RA27	24366102	CARBON FILM, 1/6W 1K OHM J
RA33	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA35	24366102	CARBON FILM, 1/6W 1K OHM J
RA36	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA37	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA38	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA40	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RA41	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RA61	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA62	24366103	CARBON FILM, 1/6W 10K OHM J
RA67	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RA68	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RA71	24011683	CHIP, METAL FILM, 1/20W 68K OHM J
RA72	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RA73	24366103	CARBON FILM, 1/6W 10K OHM J
RA74	24366333	CARBON FILM, 1/6W 33K OHM J
RB01	24366271	CARBON FILM, 1/6W 270 OHM J
RB03	24366101	CARBON FILM, 1/6W 100 OHM J
RB09	24327470	METAL RES K 1/4W 470F
RB11	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB24	24366472	CARBON FILM, 1/6W 4.7K OHM J
RB25	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RB40	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB42	24366102	CARBON FILM, 1/6W 1K OHM J
RB43	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB44	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB45	24366181	CARBON FILM, 1/6W 180 OHM J
RB46	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RB47	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
RB49	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
RB60	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RB61	24011224	CHIP, METAL FILM, 1/20W 220K OHM J
RB62	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RB63	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
RB64	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB65	24366221	CARBON FILM, 1/6W 220 OHM J
RB66	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RB67	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RG05	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RG08	24011394	CHIP, METAL FILM, 1/20W 390K OHM J
RG09	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
RG14	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
RG15	24011152	CHIP, METAL FILM, 1/20W 1.5K OHM J
RG16	24327153	METAL FILM, 1/4W 15K OHM J
RG17	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RG22	24366101	CARBON FILM, 1/6W 100 OHM J
RG23	24366101	CARBON FILM, 1/6W 100 OHM J
RG43	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RG44	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J

Location No.	Parts No.	Description
RR07	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RR93	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RS02	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
RS04	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
RS08	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
RS10	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
RS28	24366472	CARBON FILM, 1/6W 4.7K OHM J
RS40	24366101	CARBON FILM, 1/6W 100 OHM J
RS41	24011152	CHIP, METAL FILM, 1/20W 1.5K OHM J
RS42	24366101	CARBON FILM, 1/6W 100 OHM J
RS60	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RS61	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
RS62	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RS63	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
RS64	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RS65	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RS66	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RS68	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RS69	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RS70	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
RS71	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
RV01	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV02	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV03	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV04	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV07	24366103	CARBON FILM, 1/6W 10K OHM J
RV08	24366102	CARBON FILM, 1/6W 1K OHM J
RV09	24366103	CARBON FILM, 1/6W 10K OHM J
RV10	24000445	CHIP JUMPER, 1608TYPE
RV12	24366101	CARBON FILM, 1/6W 100 OHM J
RV14	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RV15	24366102	CARBON FILM, 1/6W 1K OHM J
RV16	24366471	CARBON FILM, 1/6W 470 OHM J
RV19	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RV20	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RV60	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
RV61	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RV62	24366750	CARBON FILM, 1/6W 75 OHM J
RV63	24366221	CARBON FILM, 1/6W 220 OHM J
RW02	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RW03	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RZ05	24366101	CARBON FILM, 1/6W 100 OHM J
RZ06	24366101	CARBON FILM, 1/6W 100 OHM J
RZ07	24366221	CARBON FILM, 1/6W 220 OHM J
RZ08	24011151	CHIP, METAL FILM, 1/20W 150 OHM J
RZ10	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ11	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ12	24011182	CHIP, METAL FILM, 1/20W 1.8K OHM J
RZ13	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
RZ14	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RZ15	24011151	CHIP, METAL FILM, 1/20W 150 OHM J
RZ16	24366101	CARBON FILM, 1/6W 100 OHM J
RZ17	24366181	CARBON FILM, 1/6W 180 OHM J
RZ18	24011121	CHIP, METAL FILM, 1/20W 120 OHM J
RZ21	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
RZ22	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RZ28	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ34	24011474	CHIP, METAL FILM, 1/20W 470K OHM J
RZ35	24011821	CHIP, METAL FILM, 1/20W 820 OHM J
RZ36	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RZ43	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RZ44	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ45	24366220	CARBON FILM, 1/6W 22 OHM J
RZ46	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ49	24011102	CHIP, METAL FILM, 1/20W 1K OHM J

Location No.	Parts No.	Description
RZ60	24366102	CARBON FILM, 1/6W 1K OHM J
RZ61	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
RZ62	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RZ63	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RZ65	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ66	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ68	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RZ71	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RZ75	24366330	CARBON FILM, 1/6W 33 OHM J
COILS & TRANSFORMERS		
L101	23289846	COIL, PEAKING, TRF4101AT
L201	23238703	COIL, PEAKING, TRF4820AJ
L301	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L302	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L303	23103775	COIL, FERRITE CHOKE, TEM2014
L401	23280016	COIL, PEAKING, TRF4100AZ
⚠ L441	23233092	COIL, LIN-X20H34-3.5A-18MMH, TLN2138G
L442	23248121	COIL, CHOKE, TLN3383D
⚠ L447	23248318	CHOKE 17X29H 47MMH
⚠ L461	23248173	COIL, CHOKE, TLN3333AD
L501	23238711	COIL, PEAKING, TRF4180AJ
L502	23289844	COIL, PEAKING, TRF4470AT
L805	23248213	COIL, CHOKE, TLN3481AH
L806	23248213	COIL, CHOKE, TLN3481AH
L815	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L824	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L883	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L885	23248073	COIL, CHOKE, TLN3299D
L886	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
L901	23200478	COIL, DG 0.60CU 37T-2LOOP
L902	23280024	COIL, PEAKING-220MMHJ, COLTRF4221AZ
L903	23280024	COIL, PEAKING-220MMHJ, COLTRF4221AZ
L904	23280024	COIL, PEAKING-220MMHJ, COLTRF4221AZ
LA01	23289840	COIL, PEAKING, TRF4100AT
LG01	23289220	COIL, PEAKING, TRF4220AF
LV01	23289840	COIL, PEAKING, TRF4100AT
LV98	23103159	FILTER, EMI, TEM2028AA, 7.5X6.4X8 60MMH 0.5A
LV99	23103159	FILTER, EMI, TEM2028AA, 7.5X6.4X8 60MMH 0.5A
LZ01	23289840	COIL, PEAKING, TRF4100AT
LZ02	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
LZ03	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
LZ20	23238718	COIL, PEAKING, TRF4479AJ
LZ21	23238711	COIL, PEAKING, TRF4180AJ
LZ22	23238506	COIL, PEAKING, TRF4229AJ
LZ96	23238715	COIL, PEAKING, TRF4829AJ
T401	23224367	TRANSFORMER, HORIZ DRIVER, TLN1098AH
⚠ T461	23236733	TRANSFORMER, FLYBACK, TFB4192AS
T801	23211739	COIL, LINE FILTER, TRF3229AL
T840	23217572	TRANSFORMER, POWER EI28 1, TPW1571AT
⚠ T862	23217558	TRANSFORMER, CONV TRS EER, TPW3498AE

Location No.	Parts No.	Description
SEMICONDUCTORS		
Q203	23314965	TRANSISTOR, KTC3198 Y
Q204	23114460	TRANSISTOR, RN1204
Q205	23114460	TRANSISTOR, RN1204
Q301	23319787	IC, LA7833S
Q301B	72471082	SCREW, 3X10MM
Q370	23314962	TRANSISTOR, KTA1266 Y
Q402	23114755	TRANSISTOR, 2SC2482FA-1
Q403	23314444	TRANSISTOR, 2SC4721, P
Q404	23314955	TRANSISTOR, 2SD2553(FA)
Q404B	72471082	SCREW, 3X10MM
Q421	23009187	IC, REGULATOR +9V 4%, KIA7809API
Q421B	23035308	SCREW, 3X8MM, TAPPING
Q460	23314938	TRANSISTOR, 2SD2493(P)
Q460B	72471082	SCREW, 3X10MM
Q461	23314962	TRANSISTOR, KTA1266 Y
Q471	23314961	TRANSISTOR, VCEO-50V 150M
Q472	23314965	TRANSISTOR, KTC3198 Y
Q480	23114759	TRANSISTOR, 2SA949-Y
Q481	23314965	TRANSISTOR, KTC3198 Y
Q482	23314965	TRANSISTOR, KTC3198 Y
Q483	23114469	TRANSISTOR, RN2201
Q501	23906843	IC, TA1310N
Q610	23000249	IC, TA8265K
Q610B	70391356	SCREW, BITTB3X10 SZN
Q611	23114623	TRANSISTOR, 2SC2878-A(TEM
Q612	23314962	TRANSISTOR, KTA1266 Y
Q613	23114623	TRANSISTOR, 2SC2878-A(TEM
⚠ Q801	23135032	IC,HYBRID VDSS=450V, STR-G5624A
Q801B	72471082	SCREW, 3X10MM
Q805	23114459	TRANSISTOR, RN1205
Q830	23009188	IC, REGULATOR +5V 4%, KIA7805API
Q830B	23035308	SCREW, 3X8MM, TAPPING
Q831	23314965	TRANSISTOR, KTC3198 Y
Q840	23000140	IC, MM1437AS
Q843	23114459	TRANSISTOR, RN1205
Q901	23314780	TRANSISTOR, 2SC4544
Q902	23314965	TRANSISTOR, KTC3198 Y
Q903	23314780	TRANSISTOR, 2SC4544
Q904	23314965	TRANSISTOR, KTC3198 Y
Q905	23314780	TRANSISTOR, 2SC4544
Q906	23314965	TRANSISTOR, KTC3198 Y
Q907	23314962	TRANSISTOR, KTA1266 Y
Q908	23314965	TRANSISTOR, KTC3198 Y
QA01	23009196	IC, MCU 1CHIP 8BIT 8M 42P, 88CP38AN3PV2
QA02	70129486	IC, AT24C04 10PC
QB01	23314965	TRANSISTOR, KTC3198 Y
QB03	23114459	TRANSISTOR, RN1205
QB23	23314965	TRANSISTOR, KTC3198 Y
QB40	23314965	TRANSISTOR, KTC3198 Y
QB41	23314965	TRANSISTOR, KTC3198 Y
QB60	23314962	TRANSISTOR, KTA1266 Y
QB61	23314965	TRANSISTOR, KTC3198 Y
QB62	23314965	TRANSISTOR, KTC3198 Y
QG01	23906499	IC, UPC1851BCU
QS60	23314965	TRANSISTOR, KTC3198 Y
QS61	23314965	TRANSISTOR, KTC3198 Y
QS62	23114466	TRANSISTOR, RN2204
QS63	23114623	TRANSISTOR, 2SC2878-A(TEM
QS64	23114623	TRANSISTOR, 2SC2878-A(TEM
QV01	23000686	IC, MM1311BD
QV02	23314965	TRANSISTOR, KTC3198 Y
QV60	23314965	TRANSISTOR, KTC3198 Y
QZ01	23009176	IC, 3LINE-DIGITAL Y/C SEP, TC90A53N

Location No.	Parts No.	Description
QZ04	23314965	TRANSISTOR, KTC3198 Y
QZ05	23314962	TRANSISTOR, KTA1266 Y
QZ06	23314965	TRANSISTOR, KTC3198 Y
QZ08	23314962	TRANSISTOR, KTA1266 Y
QZ14	23314962	TRANSISTOR, KTA1266 Y
QZ20	23314965	TRANSISTOR, KTC3198 Y
QZ21	23314962	TRANSISTOR, KTA1266 Y
QZ23	23314962	TRANSISTOR, KTA1266 Y
D101	23316755	DIODE, ZENER, MTZJ33C
D201	23118859	DIODE, 1SS133
D221	23118859	DIODE, 1SS133
D222	23118859	DIODE, 1SS133
D225	23357281	DIODE, DZ9.1 BS A
D226	23357281	DIODE, DZ9.1 BS A
D301	23357366	DIODE, PIV=600V IF(AV)=1A
D302	23357366	DIODE, PIV=600V IF(AV)=1A
D310	23118859	DIODE, 1SS133
D313	23118859	DIODE, 1SS133
D370	23357267	DIODE, DZ5.6 BS B
D371	23118859	DIODE, 1SS133
D406	23357366	DIODE, PIV=600V IF(AV)=1A
D408	23316414	DIODE, 3JH41(FALC3)
D409	23118622	DIODE, ZENER, RD10ES B2
D411	23357279	DIODE, DZ8.2 BS B
D430	23357283	DIODE, DZ9.1 BS C
D441	23357282	DIODE, DZ9.1 BS B
D444	23316254	DIODE, ERC06-15
D461	23118338	DIODE, RU4AM LF-K2
D462	23118859	DIODE, 1SS133
D466	23357248	DIODE, DZ2.7 BS B
D467	23357366	DIODE, PIV=600V IF(AV)=1A
D471	23357366	DIODE, PIV=600V IF(AV)=1A
⚠ D472	23115774	DIODE, ZENER, RD6.2E(FA-1)
D473	23118859	DIODE, 1SS133
D480	23357299	DIODE, DZ16 BS A
D611	23118859	DIODE, 1SS133
D612	23118859	DIODE, 1SS133
D801	23316391	DIODE, D3SB60(4103)
D805	23118859	DIODE, 1SS133
D806	23357366	DIODE, PIV=600V IF(AV)=1A
D807	23118859	DIODE, 1SS133
D810	23316269	DIODE, AK04
D830	23118859	DIODE, 1SS133
D840	23316962	DIODE, S1WBA20
D841	23357267	DIODE, DZ5.6 BS B
D845	23118859	DIODE, 1SS133
D846	23118859	DIODE, 1SS133
D883	23357344	DIODE, VRM=600V IF(AV)=1.5A, RU3AM
D885	23118094	DIODE, EU2A
D899	24019485	VARISTOR, TNR10V431K
D901	23118859	DIODE, 1SS133
D902	23118859	DIODE, 1SS133
D904	23118859	DIODE, 1SS133
D905	23118859	DIODE, 1SS133
D906	23118859	DIODE, 1SS133
D911	23118095	DIODE, ERB44-06
DA42	23357267	DIODE, DZ5.6 BS B
DB03	23358522	DIODE, LED, SIR-56SB3F
DB45	23118859	DIODE, 1SS133
DE50	23358571	LED, LAMP RED, BT-H254N-31-
DV01	23357281	DIODE, DZ9.1 BS A
DV03	23357281	DIODE, DZ9.1 BS A
DV05	23357281	DIODE, DZ9.1 BS A
DV09	23357281	DIODE, DZ9.1 BS A

Location No.	Parts No.	Description
MISCELLANEOUS		
B110	23929683	BACK TERMINAL BOARD, 32A32
B205	23974994	BAND, KESSOKU
B230	23035312	SCREW, BTB3X12SZN
B231	23035412	SCREW, BTB4X12SZN
B232	23037312	SCREW, BTBW3X12SZN
F470	23144906	FUSE, CARTRIDGE F1.25U1
F470A	23165433	FUSE HOLDER, 5.2 SOC
F801	23144518	FUSE, CARTRIDGE 125V 10A
F801A	23165433	FUSE HOLDER, 5.2 SOC
F802	23144893	FUSE, 3.15A
F802A	23165433	FUSE HOLDER, 5.2 SOC
F803	23144897	FUSE, 2A 125V
F803A	23165433	FUSE HOLDER, 5.2 SOC
G217	24366153	CARBON FILM, 1/6W 15K OHM J
G402	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
G403	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
G404	23238714	COIL, PEAKING, TRF4100AJ
G500	23280016	COIL, PEAKING, TRF4100AZ
G816	23103145	FILTER, FERRITE CHOKE 3.5X4.5 TEM2011AA
G890	23280016	COIL, PEAKING, TRF4100AZ
G891	23280016	COIL, PEAKING, TRF4100AZ
G908	23280016	COIL, PEAKING, TRF4100AZ
G933	24366750	CARBON FILM, 1/6W 75 OHM J
GJ01	24000445	CHIP JUMPER, 1608TYPE
GJ02	24000445	CHIP JUMPER, 1608TYPE
GR01	24366470	CARBON FILM, 1/6W 47 OHM J
GR02	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
GR03	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
KB01	23906805	IC, REMOTE PHOTO RECIEVER, PIC-TB17
M461B	23504358	CABLE, FOCUS
N726	23969041	TAPE WHITE 3M #1, W=1 INCH TNP COMMON
P801	23372115	POWER CORD, U/C 125V10A HSV 4 CMC-02P 3
P910	23164725	CONNECTOR, PLUG 2P
PV01	23365575	JACK, Y/C JLC, YKF51-5575
PV02	23365990	JACK, PIN 6P INCHAN JACK 6P
PV03	23365991	JACK, PIN 5P INCHAN JACK 5P
SA01	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA02	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA03	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA04	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA05	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA06	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA07	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SR81	23146564	RELAY, DC12V, TV5, DG-3
SR83	23146564	RELAY, DC12V, TV5, DG-3
V901A	23903147	SOCKET, ISH46S-E ICE 29MM
W661	23351191	SPEAKER, 60X120 8-OHM 5W
W662	23351191	SPEAKER, 60X120 8-OHM 5W
X401	23153721	CERAMIC RESONATOR, 503KHZ
X501	23153961	CRYSTAL, 3.58MHZ
XA01	23153504	CERAMIC RESONATOR, 8.00MHZ 25OHM

Location No.	Parts No.	Description
PC BOARD ASSEMBLIES		
* U901	23787442	CRT-D BOARD, PD0629A
* U902	23787441	MAIN BOARD, PD0628A
PICTURE TUBE		
⚠ V901	23312973	PICTURE TUBE, TDD32FSAK, A80AKB50X05
TUNER		
H001	23321435	TUNER, EL971L, TIF 181CH F 5V MPX
ACCESSORIES		
K912	23306359	REMOCON HAND UNIT IR, CTVUSA CT-90037
Y101	23565605	OWNER'S MANUAL, ENGLISH, 32A32
Y101F	23565606	OWNER'S MANUAL, FRENCH, 32A32
CABINET PARTS		
A201	23530246	FRONT COVER ASSY 32A32
A243	23430225	FILTER RMT TNP LOCAL CF32E50
A244	23445625	POWER BUTTON 32A32
A245	23445626	CONTROL BUTTON 32A32
A249	23836492	SPRING
A411	23426481	BACK COVER PROPER CF32E50
A701	23525037	CONTAINER CX32F60 LOCAL, CX32F60
A703	23935368	TOP PACKING LOCAL CF32E50
A708	23935369	BOTTOM PACKING CF32E50 LOCAL, CF32E50

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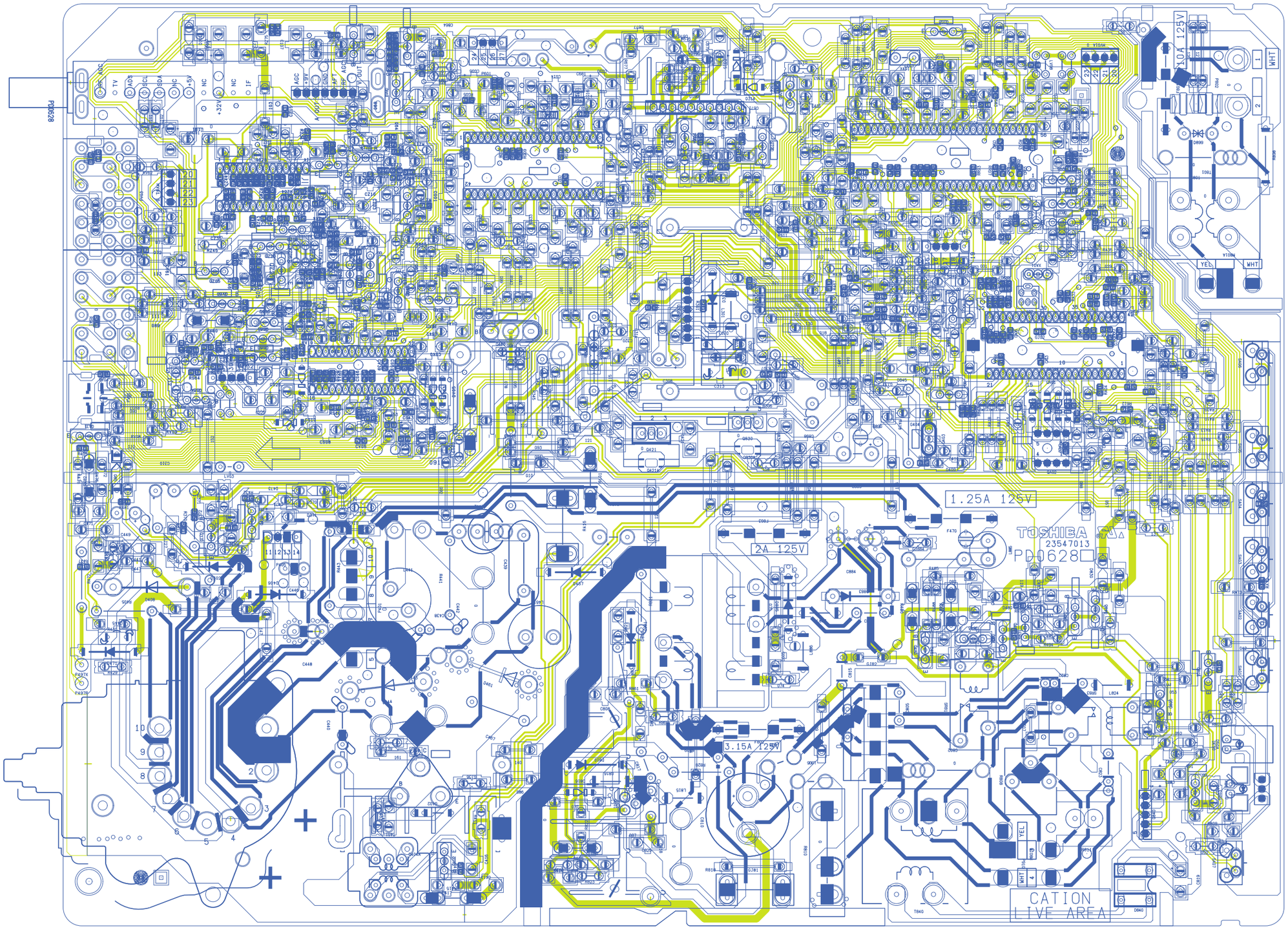
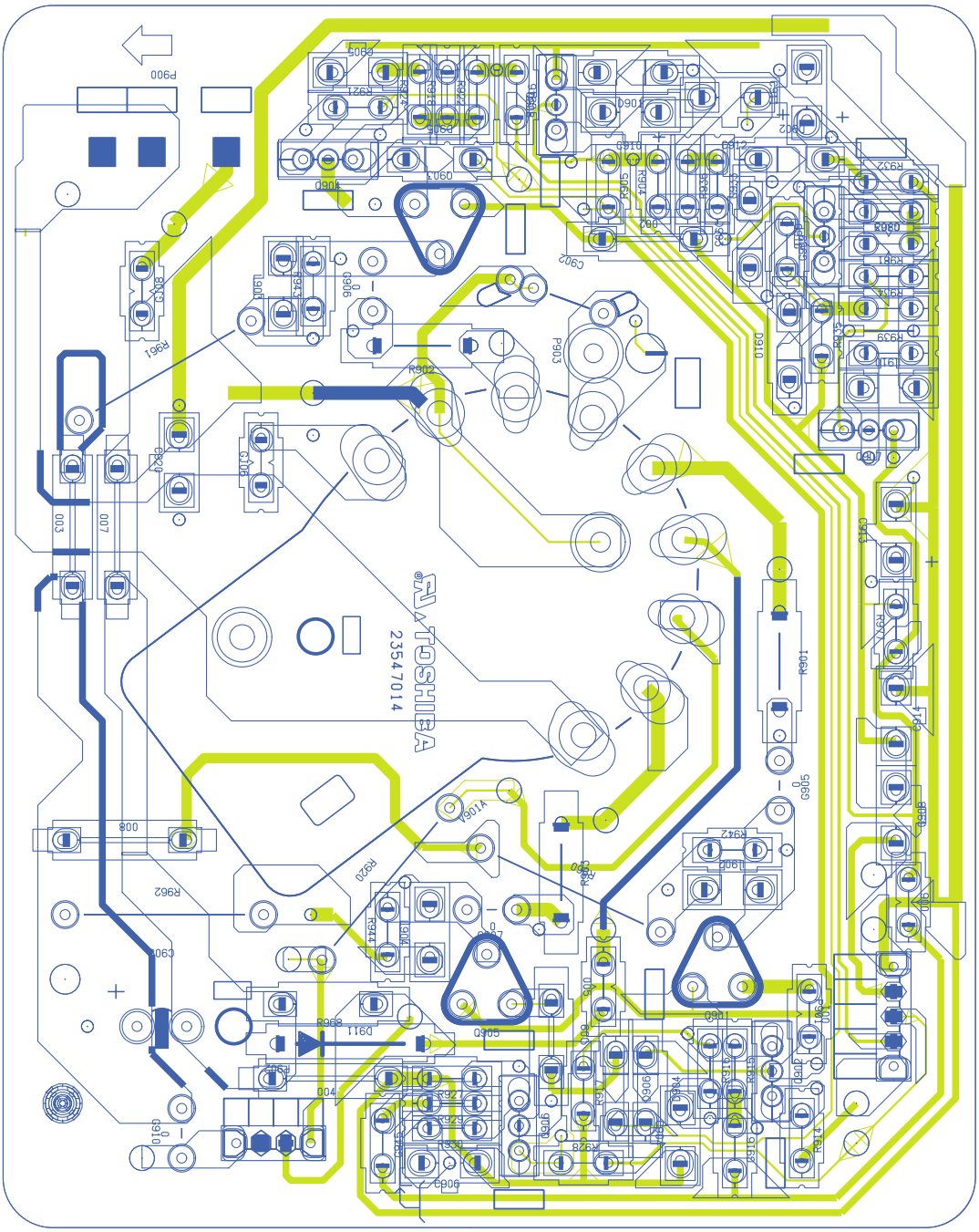
MAIN BOARD PD0628

BOTTOM (FOIL) SIDE



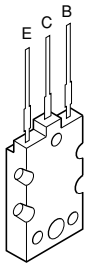
CRT / DRIVE BOARD PD0629

BOTTOM (FOIL) SIDE



TERMINAL VIEW OF TRANSISTORS

① 2SD2253
(old)
2SC5243



② 2SC3852
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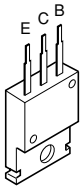
2SA1186A



③ 2SC752GTM
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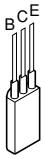

④ 2SC752
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2SC2878
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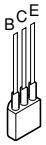
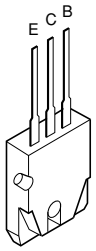
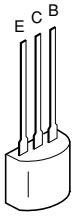
2SC2120
2SA9335



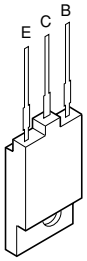
⑤ 2SA1788



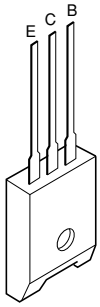
⑥ RN2203
RN2201
RN2004
RN1203
RN1204
RN2204
RN1205
RN1202
RN1201



⑦ 2SD1554
2SD2253
2SD1556
2SC5143
2SD2553



⑧ ON4409



SCHEMATIC DIAGRAM

MODEL : 32A32 Chassis No. TAC0245

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON THE MANUAL FOR THIS MODEL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on the MANUAL for this model. Do not degrade the safety of the receiver through improper servicing.

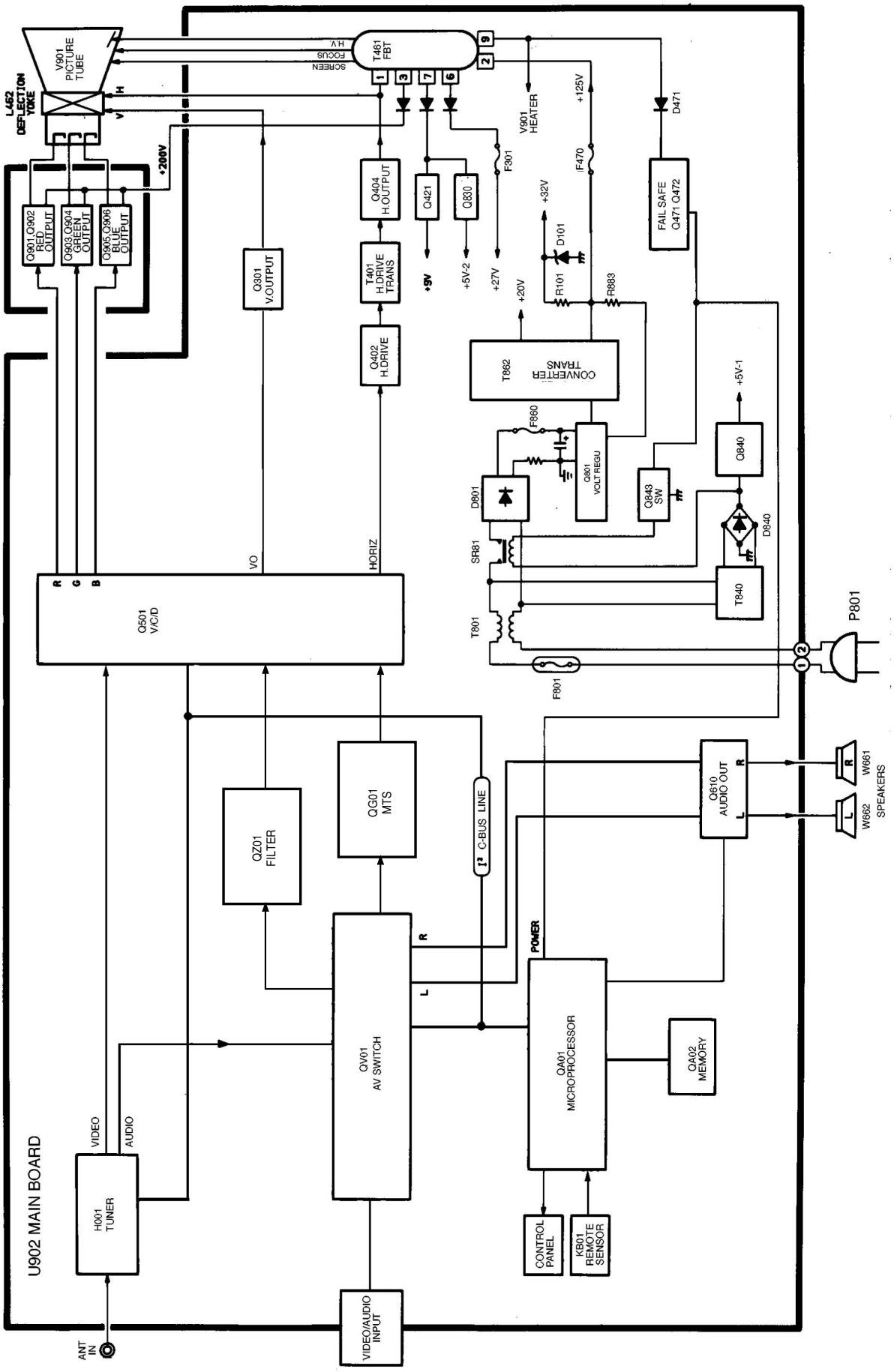
NOTE:

1. RESISTOR Resistance is shown in ohm [K = 1.000, M = 1.000.000]. All resistors are 1/6W and 5% tolerance carbon resistor, unless otherwise noted as the following marks.
   1/2R = Metal or Metal oxide of 1/2 watt 1/2S = Carbon compsistion of 1/2 watt
   1RF = Fuse resistor of 1 watt 10W = Cement of 10 watt
   K = ±10% G = ±2% F = ±1%
2. CAPACITOR Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF, and the values more than 1 in pF.
   All capacitors are ceramic 50V, unless otherwise noted as the following marks.
   Electolytic capacitor Mylar capacitor
3. The parts indicated with " ⚠ " have special characteristics, and should be replaced with identical parts only.
4. Voltages read with DIGITAL MULTI-METER from point indicated to chassing ground, using a color bar signal with all controls at normal, line voltage 120 volts.
5. Waveforms are taken receiving color bar signal with enough sensitivity.
6. Voltage reading shown are nominal values and may vary ±20% except H.V.

■ **SCHEMATIC DIAGRAM STRUCTURE:**

- MAIN Circuit
- CRT-D Circuit
- FRONT AV Circuit

CIRCUIT BLOCK DIAGRAM



SPECIFICATIONS	
TELEVISION SYSTEM	NTSC standard
CHANNEL COVERAGE	VHF: 2 through 13 UHF: 14 through 69 Cable TV: mid band (A-8 through A-1, A through I) super band (J through W) hyper band (AA through ZZ, AAA, BBB) ultra band (65 through 94, 100 through 125)
POWER SOURCE	120V AC, 60Hz, 94W
AUDIO POWER	5W + 5W
SPEAKER TYPE	2-3/8 x 4-3/4 inches (60 x 120 mm)
VIDEO/AUDIO TERMINALS	S-VIDEO INPUT Y-INPUT: 1V (p-p), 75 ohm, negative sync. C-INPUT: 0.286V (p-p) (burst signal), 75 ohm VIDEO/AUDIO INPUT (VIDEO1/VIDEO2) VIDEO: 1V(p-p), 75 ohm, negative sync. AUDIO: 150mV(rms) (30% modulation equivalent, 47k ohm) ColorStream™ (component video) INPUT Y: 1V (p-p), 75 ohm C_R: 0.7V (p-p), 75 ohm C_B: 0.7V (p-p), 75 ohm VIDEO/AUDIO OUTPUT VIDEO: 1V(p-p), 75 ohm, negative sync. AUDIO: 150mV(rms) (30% modulation equivalent, 4.7k ohm)
DIMENSIONS	Width 773 mm Height 714 mm Depth 577 mm
MASS	53.5 kg

∗ Please refer to owner's manual in detail.

– END –

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN

SCHEMATIC DIAGRAM

MODEL : 32A32 Chassis No. TAC0245

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON THE MANUAL FOR THIS MODEL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on the MANUAL for this model. Do not degrade the safety of the receiver through improper servicing.

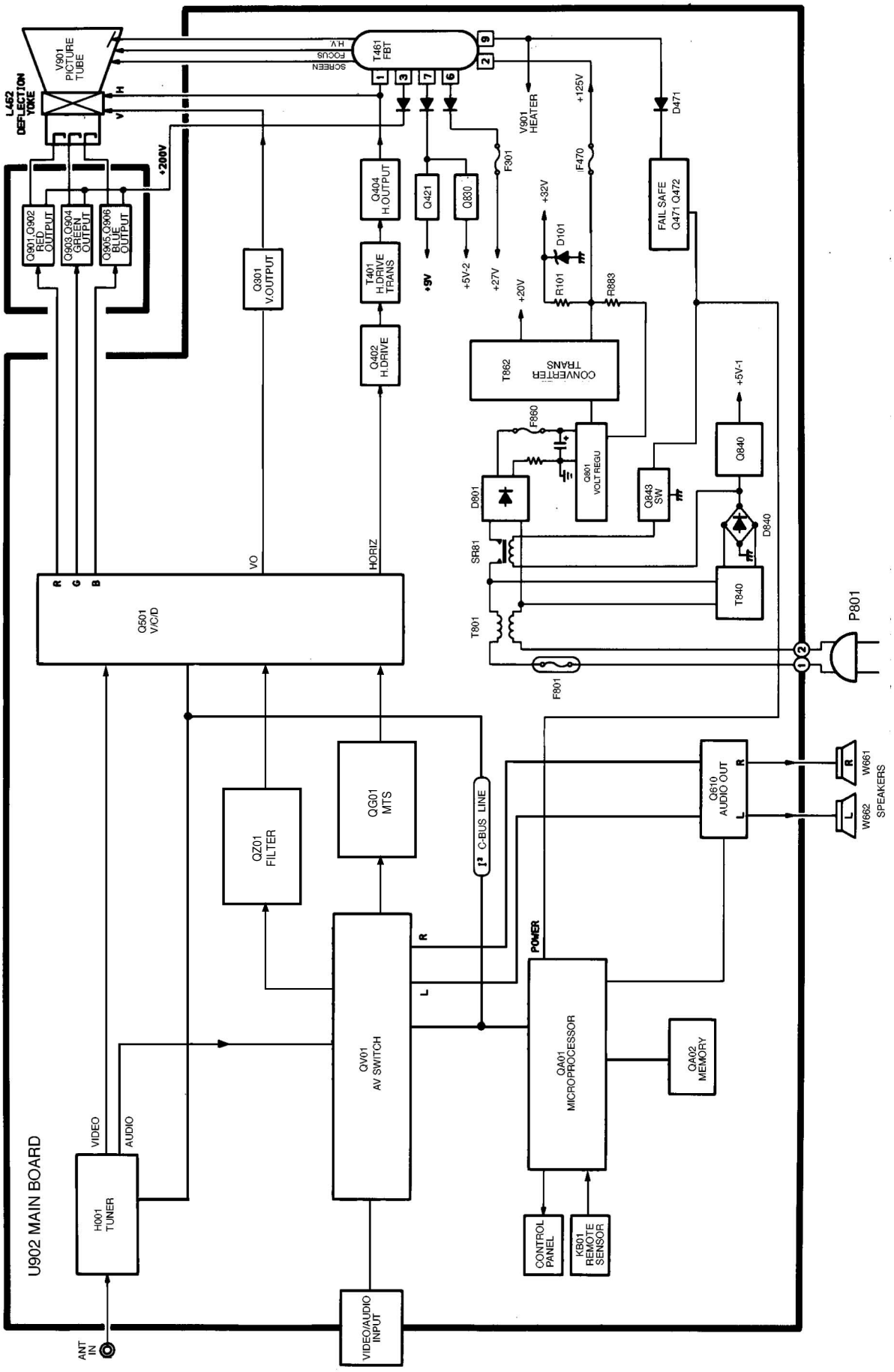
NOTE:

1. RESISTOR Resistance is shown in ohm [K = 1.000, M = 1.000.000]. All resistors are 1/6W and 5% tolerance carbon resistor, unless otherwise noted as the following marks.
   1/2R = Metal or Metal oxide of 1/2 watt 1/2S = Carbon compsistion of 1/2 watt
   1RF = Fuse resistor of 1 watt 10W = Cement of 10 watt
   K = ±10% G = ±2% F = ±1%
2. CAPACITOR Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF, and the values more than 1 in pF.
   All capacitors are ceramic 50V, unless otherwise noted as the following marks.
   Electolytic capacitor Mylar capacitor
3. The parts indicated with " ⚠ " have special characteristics, and should be replaced with identical parts only.
4. Voltages read with DIGITAL MULTI-METER from point indicated to chassing ground, using a color bar signal with all controls at normal, line voltage 120 volts.
5. Waveforms are taken receiving color bar signal with enough sensitivity.
6. Voltage reading shown are nominal values and may vary ±20% except H.V.

■ **SCHEMATIC DIAGRAM STRUCTURE:**

- MAIN Circuit
- CRT-D Circuit
- FRONT AV Circuit

CIRCUIT BLOCK DIAGRAM

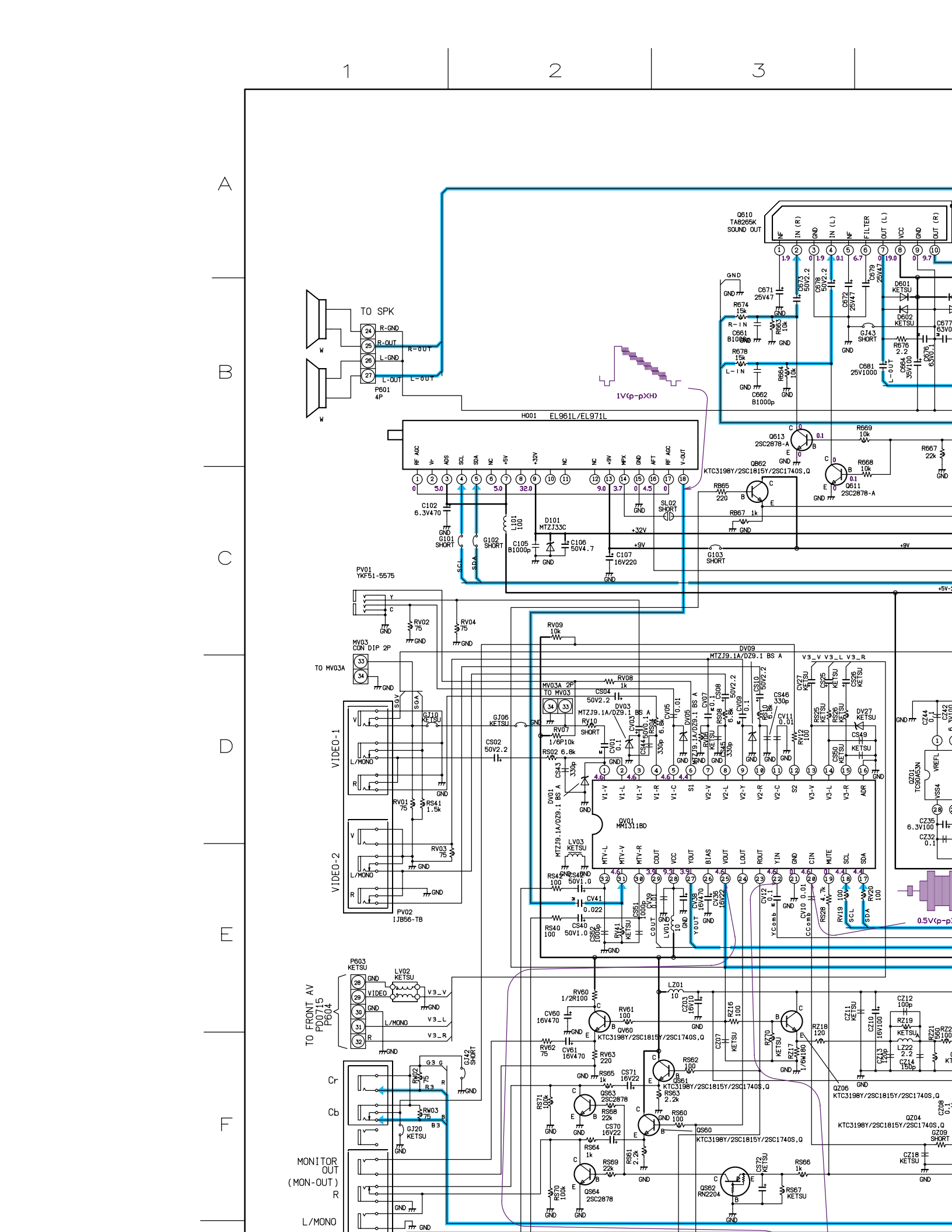


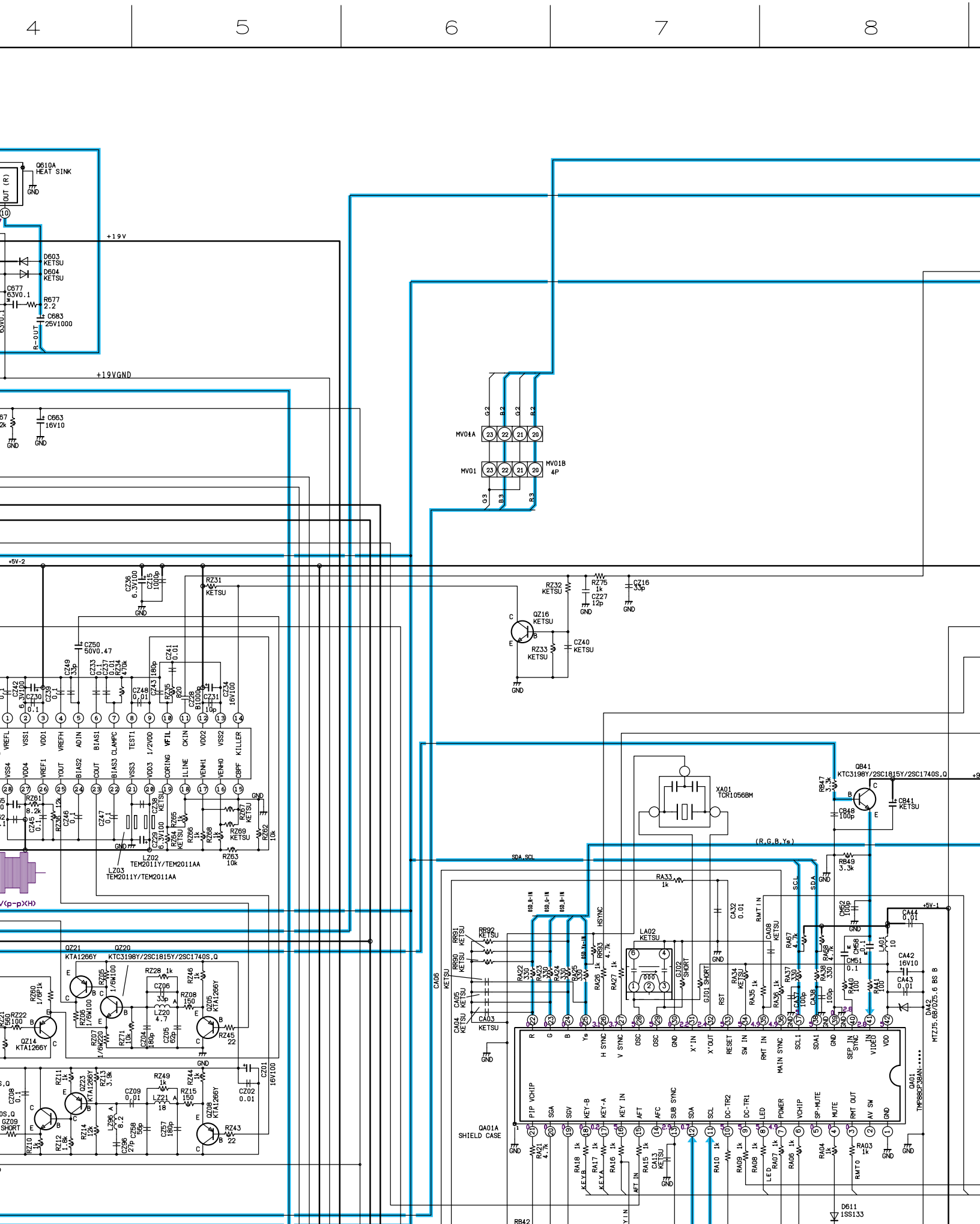
U902 MAIN UNIT PD0628A---32A32
PD0628B---36A42
PD0628C---32A42

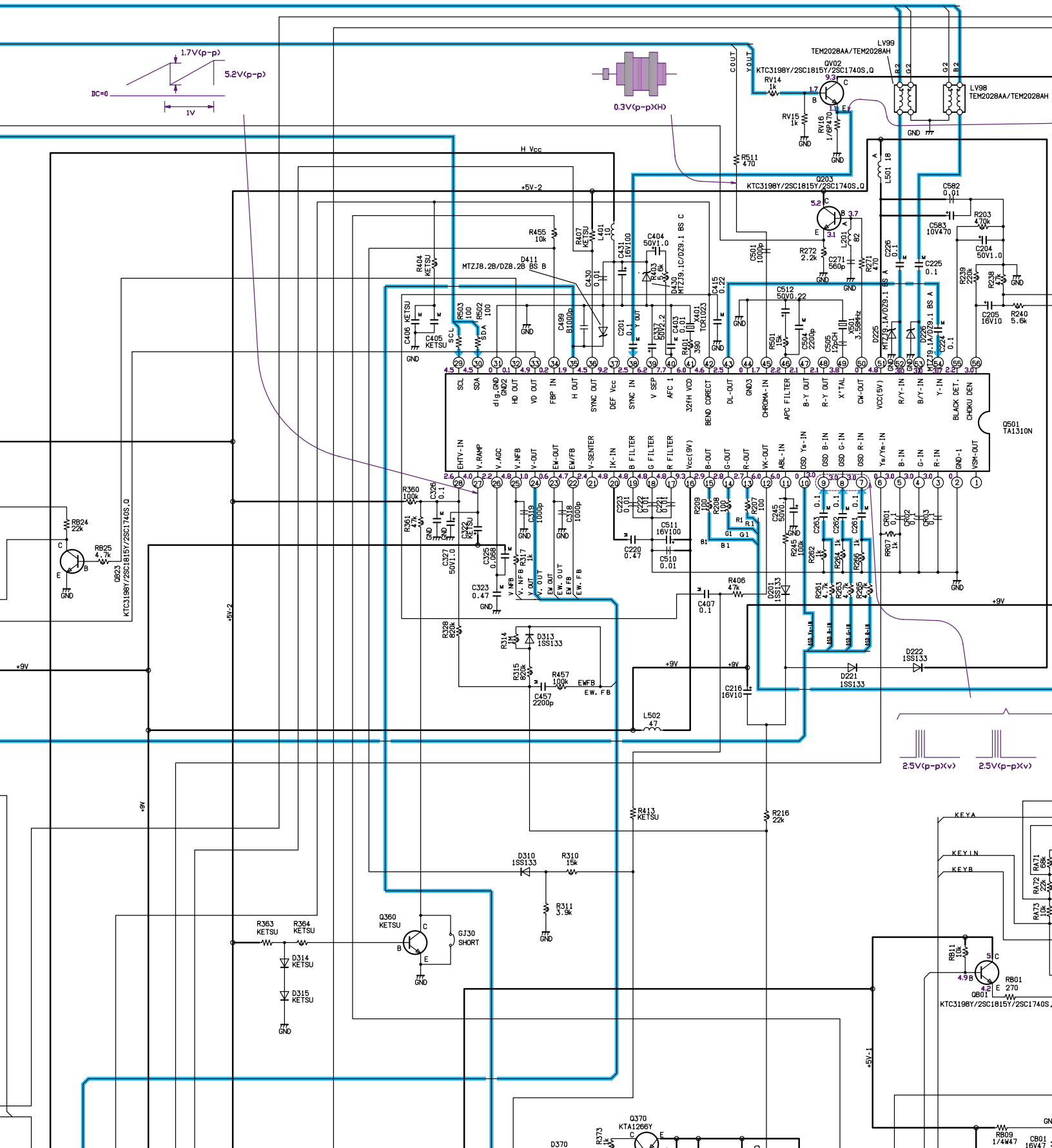
Undef±24			
Undef±23			
Undef±22			
Undef±21			
Undef±20			
Undef±19			
Undef±18			
Undef±17			
Undef±16			
Undef±15			
RS26	KETSU	6.8k	6.8k
RS25	KETSU	6.8k	6.8k
R460	4.7k	4.7k	5.6k
P603	KETSU	5PIN	5PIN
LV02	KETSU	TEM2028K	TEM2028K
L447	TLN3456AD/TLN3456AF	TLN3456AD/TLN3456AF	KETSU
GJ80	KETSU	KETSU	SHORT
DV27	KETSU	MTZJ9.1A	MTZJ9.1A
CV27	KETSU	50V0.1	50V0.1
CS50	KETSU	330p	330p
CS49	KETSU	330p	330p
CS26	KETSU	50V2.2	50V2.2
CS25	KETSU	50V2.2	50V2.2
C443	1500VH9100p	1500VH9100p	1500VH7800p
C442	315V0.56u	315V0.56u	315V0.62u
	32A32	32A42	36A42

× KETSU means to open the circuit.

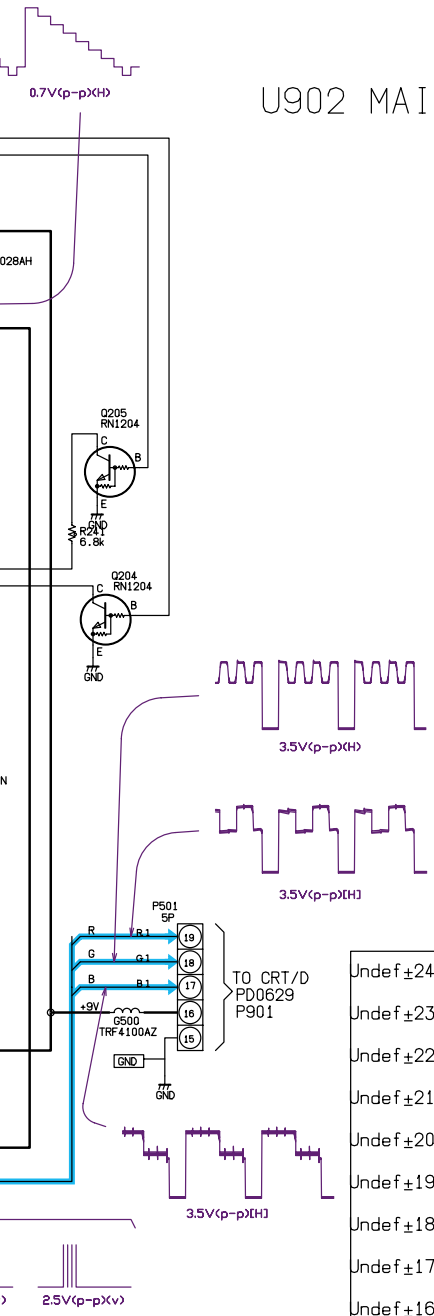
MAIN
32A32/32A42/36A42

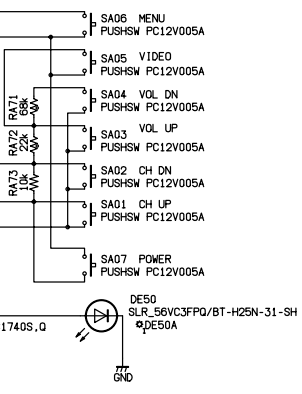

1
2
3
A
B
C
D
E
F
TO SPK
R-GND
R-OUT
L-GND
L-OUT
P601
4P
Q610
TA8265K
SOUND OUT
NF
IN (R)
GND
IN (L)
NF
FILTER
OUT (L)
VCC
GND
OUT (R)
H001 EL961L/EL971L
RF AGC
Vt
ADS
SCL
SDA
NC
+5V
+32V
NC
NC
+9V
MPX
GND
AFT
RF AGC
V-OUT
Q613
2SC2878-A
Q611
2SC2878-A
Q612
KTC3198Y/2SC1815Y/2SC1740S,Q
PV01
YKF51-5575
MV03
CON DIP 2P
TO MV03A
VIDEO-1
VIDEO-2
PV02
IJB56-TB
DV09
MTZJ9.1A/DZ9.1 BS A
QV01
MM1311BD
P603
KETSU
TO FRONT AV
PD0715
P604
MONITOR
OUT
(MON-OUT)
R
L/MONO
Cr
Cb
QV60
KTC3198Y/2SC1815Y/2SC1740S,Q
QS61
KTC3198Y/2SC1815Y/2SC1740S,Q
QS60
KTC3198Y/2SC1815Y/2SC1740S,Q
QZ06
KTC3198Y/2SC1815Y/2SC1740S,Q
QZ04
KTC3198Y/2SC1815Y/2SC1740S,Q
QS63
2SC2878
QS64
2SC2878
QS62
RN2204
1V(p-p)(H)
0.5V(p-p)

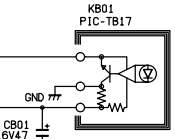

4
5
6
7
8
Q610A
HEAT SINK
GND
+19V
D603
KETSU
D604
KETSU
C677
63V0.1
R677
2.2
C683
25V1000
R-OUT
+19VGND
C663
16V10
GND
MV01A
MV01
MV01B
4P
G2
B2
G3
B3
+5V-2
CZ36
6.3V100
CZ15
100p
RZ31
KETSU
CZ50
50V0.47
CZ49
33p
CZ33
0.1
CZ37
0.01
RZ34
470k
CZ41
0.01
CZ42
6.3V100
CZ30
0.1
CZ39
0.1
CZ48
0.01
CZ43
180p
RZ75
820
CZ28
B1000p
CZ31
10p
CZ34
16V100
VREFL
VSS1
VDD1
VREFH
ADIN
B1AS1
CLAMPC
TEST1
1/2VDD
VFIL
CKIN
VDD2
VSS2
KILLER
VSS4
VDD4
VREF1
YOUT
B1AS2
COUT
B1AS3
VSS3
VDD3
CORING
1LLINE
VENH1
VENH0
CBPF
RZ61
8.2k
RZ35
10k
CZ45
0.1
CZ46
0.1
CZ47
0.1
CZ29
6.3V100
CZ38
KETSU
RZ64
KETSU
RZ65
1k
RZ66
1k
RZ68
1k
RZ67
KETSU
RZ69
KETSU
RZ62
10k
RZ63
10k
GND
LZ02
TEM2011Y/TEM2011AA
LZ03
TEM2011Y/TEM2011AA
RZ32
KETSU
RZ75
1k
CZ27
12p
CZ16
33p
QZ16
KETSU
CZ40
KETSU
RZ33
KETSU
XA01
TCR1056BM
QB41
KTC3198Y/2SC1815Y/2SC1740S,Q
RB47
3.3k
CB48
100p
CB41
KETSU
(R,G,B,Ys)
SDA,SCL
RB49
3.3k
RA33
1k
SCL
SDA
+5V-1
CA44
0.01
CM52
100p
CM58
0.1
CM51
0.1
LA01
10
CA42
16V10
CA43
0.01
RA40
100
RA41
100
RA42
100
RA43
100
DA42
MTZJ5.6B/D25.6 BS B
QZ21
KTA1266Y
QZ20
KTC3198Y/2SC1815Y/2SC1740S,Q
RZ60
1/6P1k
RZ05
1/6W100
RZ28
1k
RZ46
1k
CZ06
3p
RZ08
150
RZ06
1/6W100
LZ20
4.7
QZ05
KTA1266Y
RZ22
100
QZ14
KTA1266Y
RZ07
1/6W100
RZ71
10k
CZ04
180p
CZ05
62p
RZ45
22
RZ11
1k
QZ23
KTA1266Y
RZ13
3.9k
RZ49
1k
RZ44
1k
CZ09
01
LZ21
18
RZ15
150
CZ02
0.01
16V100
QZ08
KTA1266Y
RZ43
22
RZ14
12k
RZ12
1.8k
CZ96
2.7p
CZ58
56p
CZ57
180p
RZ10
1k
CZ08
0.1
GZ09
SHORT
RR91
KETSU
RR92
KETSU
RR90
KETSU
CA06
KETSU
CA05
KETSU
CA04
KETSU
CA03
KETSU
RR93
4.7k
HSYNC
LA02
KETSU
GJ01
SHORT
GJ02
SHORT
RST
CA32
0.01
RMT IN
CA08
KETSU
RA67
4.7k
RA68
4.7k
RA22
330
RA23
330
RA24
330
RA25
330
RA26
1k
RA27
1k
RA34
KETSU
RA35
1k
RA36
1k
RA37
330
RA38
330
CA37
100p
CA38
100p
QA01
TMP88CP38AN-****
QA01A
SHIELD CASE
R
G
B
Ys
H SYNC
V SYNC
OSC
OSC
GND
X'IN
X'OUT
RESET
SW IN
RMT IN
MAIN SYNC
SCL1
SDA1
GND
SEP IN SYNC
VIDEO IN
VDD
PIP VCHIP
SGA
SGV
KEY-B
KEY-A
KEY IN
AFT
AFC
SUB SYNC
SDA
SCL
DC-TR2
DC-TR1
LED
POWER
VCHIP
SP-MUTE
MUTE
RMT OUT
AV SW
GND
RA21
4.7k
RA18
1k
RA17
1k
RA16
1k
RA15
1k
CA13
KETSU
RA10
1k
RA09
1k
RA08
1k
RA07
1k
RA06
1k
RA04
1k
RA03
1k
RMT0
KEYB
KEYA
AFT IN
LED
RB42
D611
1SS133


1.7V(p-p)
5.2V(p-p)
DC=0
1V
0.3V(p-p)(H)
H Vcc
+5V-2
+9V
+5V-1
GND
Q501
TA1310N
SCL
SDA
dig GND
GND2
HD OUT
VD OUT
FBP IN
H OUT
SYNC OUT
DEF Vcc
SYNC IN
V SEP
AFC 1
32FH VCO
BEND CORECT
DL-OUT
GND3
CHROMA-IN
APC FILTER
B-Y OUT
R-Y OUT
X'TAL
CW-OUT
VCC(5V)
R/Y-IN
B/Y-IN
Y-IN
BLACK DET.
CHOKU DEN
EHTY-IN
V.RAMP
V.AGC
V.NFB
V-OUT
EW-OUT
EW/FB
V-SENTER
IK-IN
B FILTER
G FILTER
R FILTER
Vcc(9V)
B-OUT
G-OUT
R-OUT
VK-OUT
ABL-IN
OSD Ys-IN
OSD B-IN
OSD G-IN
OSD R-IN
Ys/Ym-IN
B-IN
G-IN
R-IN
GND-1
VSM-OUT
Q203
KTC3198Y/2SC1815Y/2SC1740S,Q
Q0I3
KTC3198Y/2SC1815Y/2SC1740S,Q
QV02
KTC3198Y/2SC1815Y/2SC1740S,Q
LV99
TEM2028AA/TEM2028AH
LV98
TEM2028AA/TEM2028AH
Q360
KETSU
GJ30
SHORT
Q370
KTA1266Y
QB01
KTC3198Y/2SC1815Y/2SC1740S,
D411
MTZJ8.2B/DZ8.2B BS B
D430
MTZ9.1C/DZ9.1 BS C
D225
MTZ9.1A/DZ9.1 BS A
D226
MTZ9.1A/DZ9.1 BS A
D313
1SS133
D310
1SS133
D314
KETSU
D315
KETSU
D201
1SS133
D222
1SS133
D221
1SS133
L501
18
L502
47
L401
10
X501
3.58MHz
2.5V(p-p)(v)
2.5V(p-p)(v)
KEYA
KEYIN
KEYB

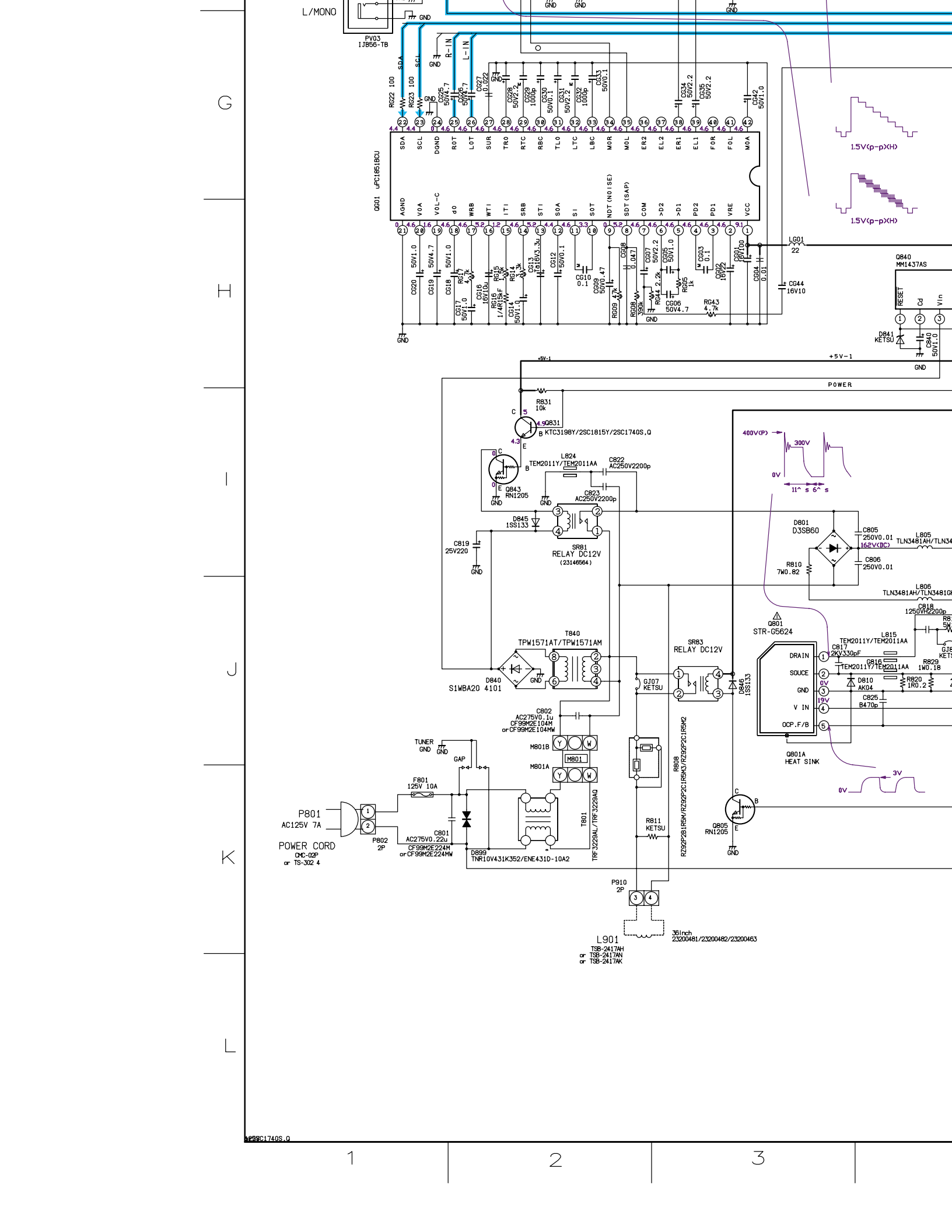
U902 MAIN UNIT PD0628A---32A32
PD0628B---36A42
PD0628C---32A42

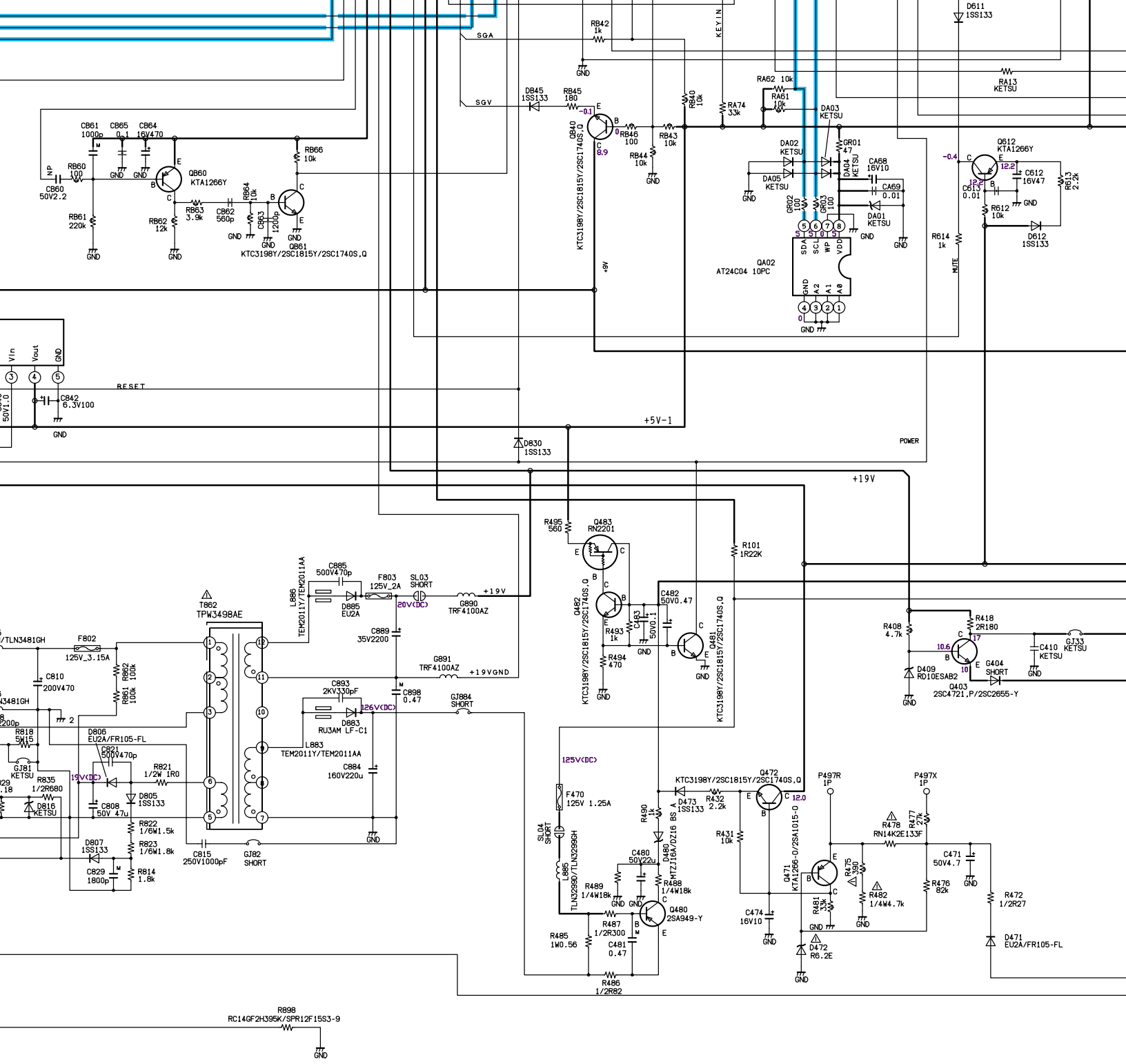


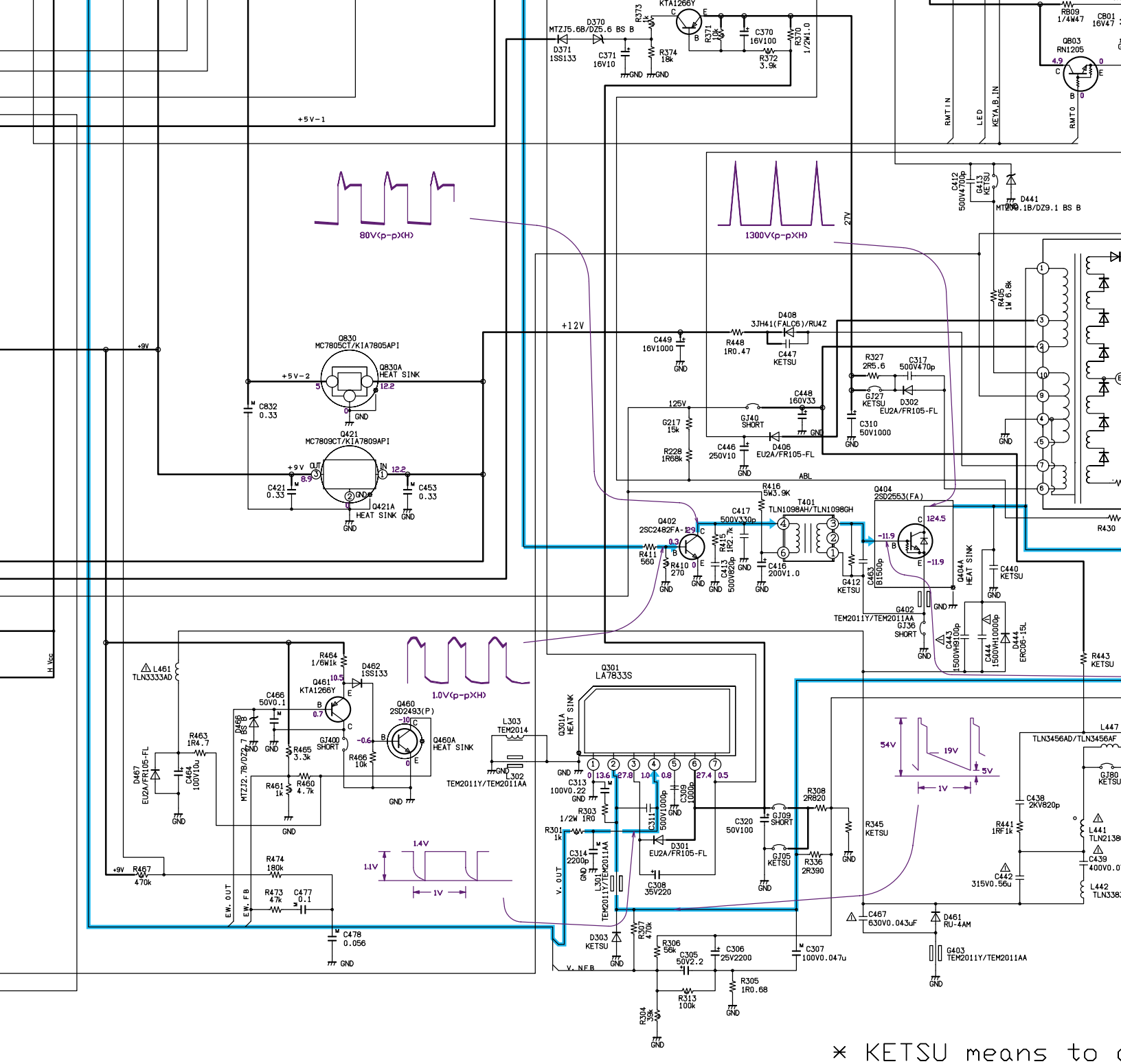




Undef±24			
Undef±23			
Undef±22			
Undef±21			
Undef±20			
Undef±19			
Undef±18			
Undef±17			
Undef±16			
Undef±15			
RS26	KETSU	6.8k	6.8k
RS25	KETSU	6.8k	6.8k
R460	4.7k	4.7k	5.6k
P603	KETSU	5PIN	5PIN
LV02	KETSU	TEM2028K	TEM2028K
L447	TLN3456AD/TLN3456AF	TLN3456AD/TLN3456AF	KETSU
GJ80	KETSU	KETSU	SHORT
DV27	KETSU	MTZJ9.1A	MTZJ9.1A
CV27	KETSU	50V0.1	50V0.1
CS50	KETSU	330p	330p
CS49	KETSU	330p	330p
CS26	KETSU	50V2.2	50V2.2

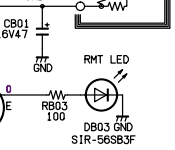

L/MONO
PV03
IJB56-TB
SDA
SCL
R-IN
L-IN
RG22 100
RG23 100
CG25 50V4.7
CG26 50V4.7
CG27 0.022
CG28 50V2.2
CG29 1000p
CG30 50V0.1
CG31 50V2.2
CG32 1000p
CG33 50V0.1
CG34 50V2.2
CG35 50V2.2
CG42 50V1.0
QG01 uPC1851BCU
SDA SCL DGND ROT LOT SUR TRO RTC RBC TLO LTC LBC MOR MOL ER2 EL2 ER1 EL1 FOR FOL MOA
AGND VOA VOL-C dO WRB WTI ITI SRB STI SOA SI SOT NDT(NOISE) SDT(SAP) COM >D2 >D1 PD2 PD1 VRE VCC
1.5V(p-p)(H)
1.5V(p-p)(H)
LG01
22
CG44
16V10
Q840
MM1437AS
RESET
Cd
Vin
D841
KETSU
C840
50V1.0
GND
+5V-1
POWER
R831
10k
Q831
KTC3198Y/2SC1815Y/2SC1740S,Q
Q843
RN1205
L824
TEM2011Y/TEM2011AA
C822
AC250V2200p
C823
AC250V2200p
D845
1SS133
SR81
RELAY DC12V
(23146564)
C819
25V220
400V(P)
300V
0V
11^ s 6^ s
D801
D3SB60
C805
250V0.01
162V(DC)
L805
TLN3481AH/TLN34
C806
250V0.01
R810
7W0.82
L806
TLN3481AH/TLN3481G
C818
1250V2200p
Q801
STR-G5624
T840
TPW1571AT/TPW1571AM
D840
S1WBA20 4101
SR83
RELAY DC12V
GJ07
KETSU
D846
1SS133
L815
TEM2011Y/TEM2011AA
C817
2KV330pF
DRAIN
SOUCE
GND
V IN
OCP.F/B
G816
TEM2011Y/TEM2011AA
D810
AK04
R820
1R0.2
R829
1W0.18
C825
B470p
Q801A
HEAT SINK
3V
0V
C802
AC275V0.1u
CF99M2E104M
or CF99M2E104MW
TUNER
GND
GAP
M801B
M801
M801A
F801
125V 10A
P801
AC125V 7A
POWER CORD
CMC-02P
or TS-302 4
P802
2P
C801
AC275V0.22u
CF99M2E224M
or CF99M2E224MW
D899
TNR10V431K352/ENE431D-10A2
T801
TRF3229AL/TRF3229AQ
R808
RZ92P2B1R5M/RZ92P2C1R5MJ/RZ92P2C1R5MJ
R811
KETSU
Q805
RN1205
P910
2P
L901
TSB-2417AH
or TSB-2417AN
or TSB-2417AK
36inch
23200481/23200482/23200463
2SC1740S,Q

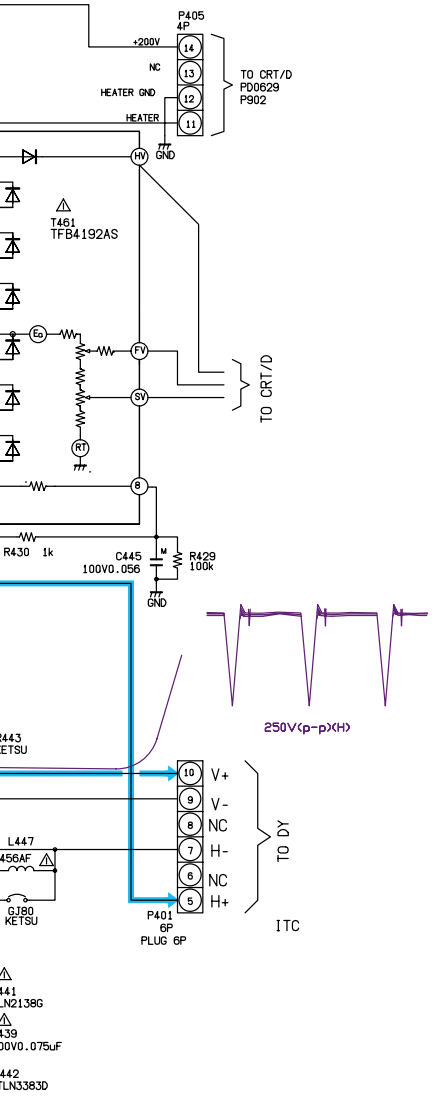

SGA
SGV
KEY IN
RB42 1k
RB45 180
RB40 10k
RB46 100
RB43 10k
RB44 10k
RA74 33k
RA62 10k
RA61 10k
RA13 KETSU
DA03 KETSU
DA02 KETSU
DA05 KETSU
DA04 KETSU
DA01 KETSU
GR01 47
GR02 100
GR03 100
CA68 16V10
CA69 0.01
QA02 AT24C04 10PC
SDA SCL WP VDD
GND A2 A1 A0
Q612 KTA1266Y
C612 16V47
C613 0.01
R612 10k
R613 2.2k
R614 1k
D612 1SS133
MUTE
D611 1SS133
CB61 1000p
CB65 0.1
CB64 16V470
CB60 50V2.2
RB60 100
RB61 220k
RB62 12k
RB63 3.9k
CB62 560p
CB63 1200p
RB64 10k
RB66 10k
QB60 KTA1266Y
QB61 KTC3198Y/2SC1815Y/2SC1740S,Q
KTC3198Y/2SC1815Y/2SC1740S,Q
+9V
Vin Vout GND
RESET
C842 6.3V100
+5V-1
D830 1SS133
POWER
+19V
R495 560
Q483 RN2201
R101 1R22K
Q482 KTC3198Y/2SC1815Y/2SC1740S,Q
C482 50V0.47
C483 50V0.1
R493 1k
R494 470
Q481 KTC3198Y/2SC1815Y/2SC1740S,Q
R408 4.7k
R418 2R180
C410 KETSU
GJ33 KETSU
D409 RD10ESAB2
G404 SHORT
Q403 2SC4721,P/2SC2655-Y
T862 TPW3498AE
L886 TEM2011Y/TEM2011AA
C885 500V470p
D885 EU2A
F803 125V_2A
SL03 SHORT
G890 TRF4100AZ
20V(DC)
C889 35V2200
G891 TRF4100AZ
+19VGND
C893 2KV330pF
D883 RU3AM LF-C1
126V(DC)
GJ884 SHORT
L883 TEM2011Y/TEM2011AA
C884 160V220u
C898 0.47
F802 125V_3.15A
C810 200V470
R861 100k
R862 100k
D806 EU2A/FR105-FL
C821 500V470p
R821 1/2W 1R0
D805 1SS133
C808 50V 47u
R822 1/6W1.5k
R823 1/6W1.8k
R814 1.8k
D807 1SS133
C829 1800p
C815 250V1000pF
GJ82 SHORT
R818 5W15
GJ81 KETSU
R835 1/2R680
D816 KETSU
19V(DC)
125V(DC)
F470 125V 1.25A
SL04 SHORT
L885 TLN3299D/TLN3299GH
R490 1k
D473 1SS133
D480 MTZJ16A/DZ16 BS A
C480 50V22u
R489 1/4W18k
R488 1/4W18k
Q480 2SA949-Y
R487 1/2R300
C481 0.47
R485 1W0.56
R486 1/2R82
Q472 KTC3198Y/2SC1815Y/2SC1740S,Q
R432 2.2k
R431 10k
Q471 KTA1266-O/2SA1015-O
R481 33k
C474 16V10
D472 R6.2E
P497R 1P
P497X 1P
R478 RN14K2E133F
R477 27k
R475 390
R482 1/4W4.7k
R476 82k
C471 50V4.7
R472 1/2R27
D471 EU2A/FR105-FL
R898 RC14GF2H395K/SPR12F15S3-9



* KETSU means to

CS26	KETSU	50V2.2	50V2.2
CS25	KETSU	50V2.2	50V2.2
C443	1500VH9100p	1500VH9100p	1500VH7800p
C442	315V0.56u	315V0.56u	315V0.62u
	32A32	32A42	36A42

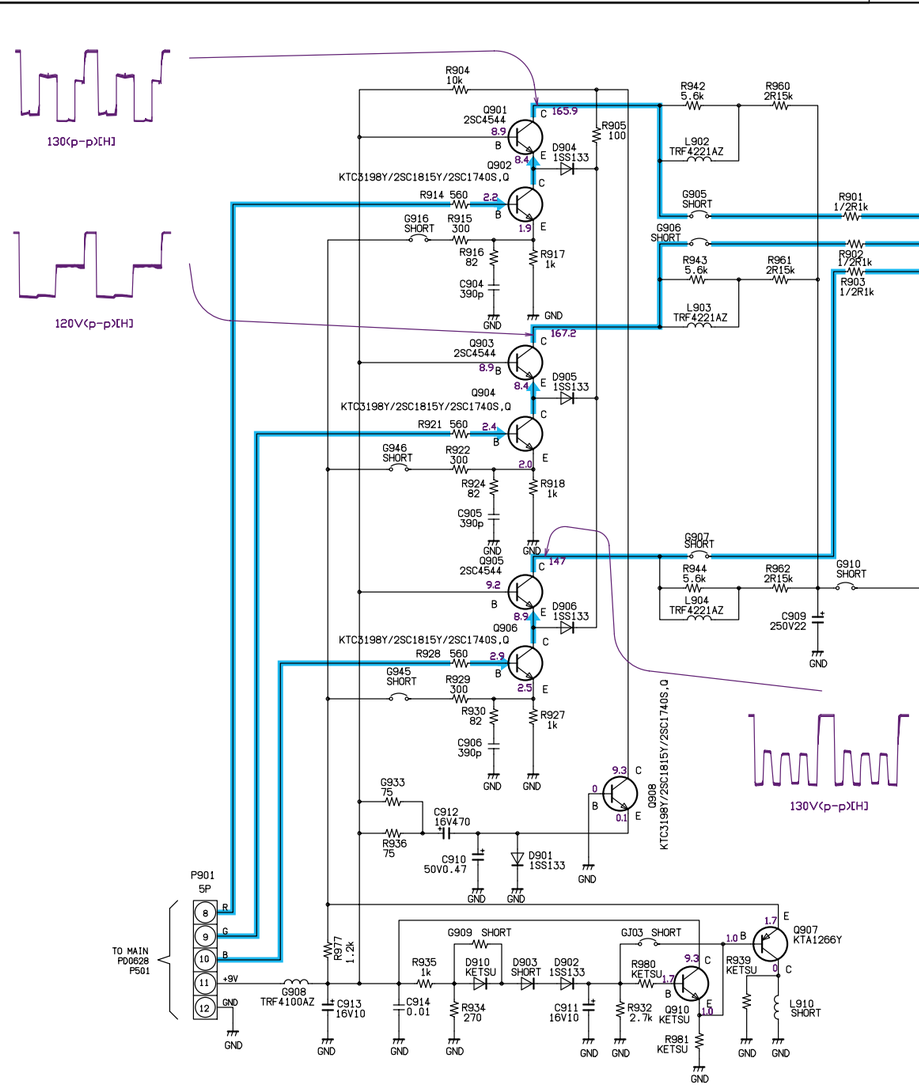




open the circuit.

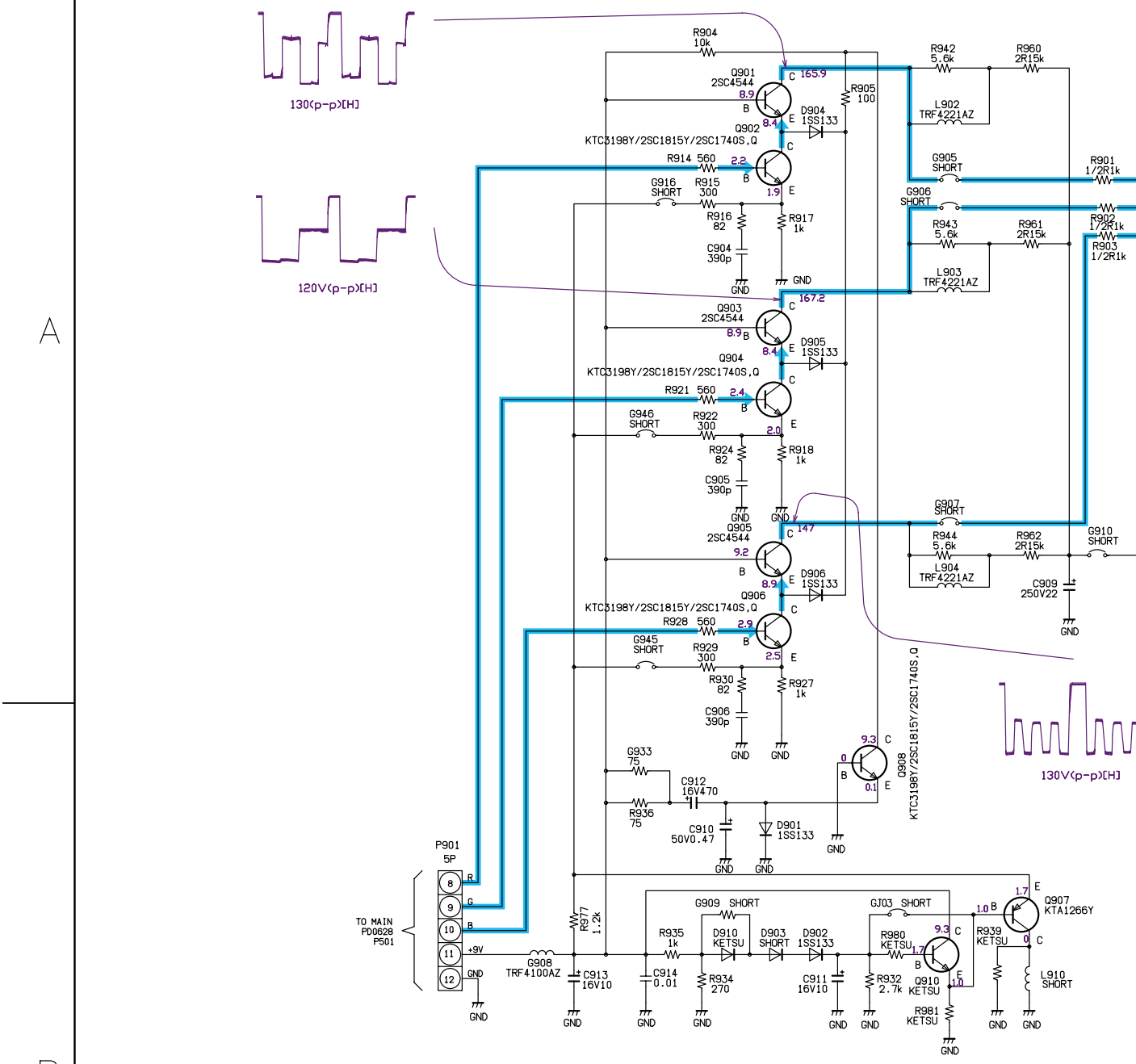
MAIN
32A32/32A42/36A42

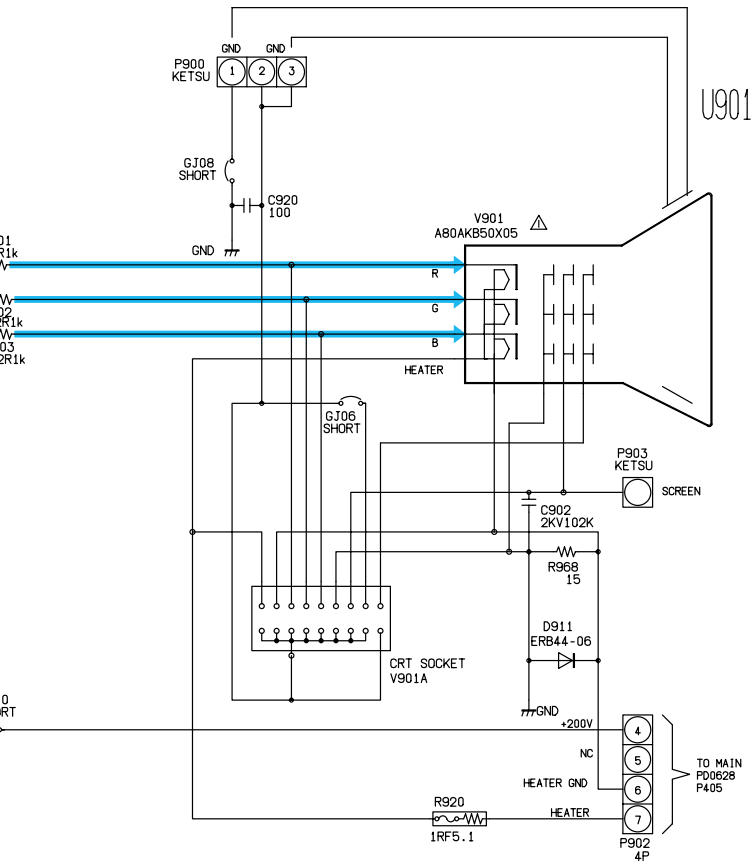
U901 CRT.D UNIT PD0629A(32A32/32A42/36A42)



* KETSU means to open the circuit.

CRT-DRIVE
32A32/32A42/36A42


130(p-p)[H]
120V(p-p)[H]
R904 10k
Q901 2SC4544
R905 100
D904 1SS133
Q902 KTC3198Y/2SC1815Y/2SC1740S,Q
R914 560
G916 SHORT
R915 300
R916 82
R917 1k
C904 390p
GND
R942 5.6k
R960 2R15k
L902 TRF4221AZ
G905 SHORT
R901 1/2R1k
G906 SHORT
R902 1/2R1k
R943 5.6k
R961 2R15k
R903 1/2R1k
L903 TRF4221AZ
Q903 2SC4544
D905 1SS133
Q904 KTC3198Y/2SC1815Y/2SC1740S,Q
R921 560
G946 SHORT
R922 300
R924 82
R918 1k
C905 390p
G907 SHORT
Q905 2SC4544
R944 5.6k
R962 2R15k
G910 SHORT
L904 TRF4221AZ
C909 250V22
D906 1SS133
Q906 KTC3198Y/2SC1815Y/2SC1740S,Q
R928 560
G945 SHORT
R929 300
R930 82
R927 1k
C906 390p
Q908 KTC3198Y/2SC1815Y/2SC1740S,Q
130V(p-p)[H]
G933 75
R936 75
C912 16V470
C910 50V0.47
D901 1SS133
P901 5P
TO MAIN PD0628 P501
R
G
B
+9V
GND
G908 TRF4100AZ
R977 1.2k
C913 16V10
C914 0.01
R934 270
G909 SHORT
D910 KETSU
R935 1k
D903 SHORT
D902 1SS133
C911 16V10
GJ03 SHORT
R980 KETSU
R932 2.7k
Q910 KETSU
R981 KETSU
Q907 KTA1266Y
R939 KETSU
L910 SHORT



U901 CRT.D UNIT PD0629A(32A32/32A42/36A42)

A

B

* KETSU means to open the circuit.

CRT-DRIVE
32A32/32A42/36A42